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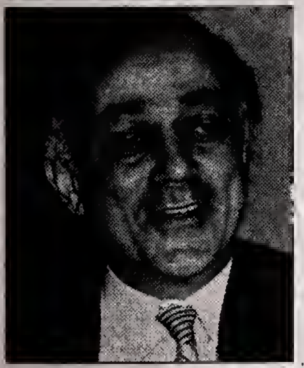


An interview with the lead designer of the controversial Ada language/**14**

Business is good
for Eurôpe's first commercial user of the DG/Rolm Ada Development Environment/**15**

In Depth
Keeping business secrets secret
ID/7

SECTIONS

Editorial/**30**
Software & Services/**37**
Communications/**53**
Systems & Peripherals/**61**
Microcomputers/**69**
Computer Industry/**79**

INSIDE

IBM added to and subtracted from its line of System/38 processors last week. **Page 4.**

■

Are your end users buying too many different kinds of microcomputer software? Computer Associates International, Inc. claimed a solution: software for the IBM Personal Computer that integrates applications, a mainframe link, multitasking and a window manager. **Page 5.**

■

The suit in which IBM charged National Semiconductor Corp. and its National Advanced Systems, Inc. subsidiary with stealing IBM trade secrets was settled out of court last week. **Page 6.**

■

Reduced costs and increased flexibility are the two major reasons that computer-based training is gaining in popularity. **Page 8.**

■

Computerization isn't for everyone. A recommissioned battleship that saw action off the Lebanese coast last month is sticking with its World War II-era analog warfare system. **Page 16.**

■

Have a pain in your backlog? You may find a technique called normalization soothing. **Page 37.**

■

Digital Equipment Corp.'s executive suites seem to come equipped with revolving doors. **Page 79.**

■

AT&T: Keep access fees, we'll cut rates

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T may increase its private-line rates only 7.9% overall — rather than the 15.3% originally planned — if the Federal Communications Commission implements its plan to charge users for access to the long-distance network. The company said it might also decrease Message Toll Service and Wats charges more than the 10.5% promised earlier.

Both offers were included in comments AT&T submitted to the commission Jan. 6. They appear to be part of an intense lobbying campaign aimed at Congress; AT&T has also sent nearly two million brochures and letters to community leaders, shareholders and employees.

A bill passed by the U.S. House of Representatives, H.R. 4102, forbids the FCC from putting the access charge plan into effect. Similar legislation (S. 1660) is awaiting a final vote in the Senate.

The White House opposes these measures, as do many corporate communications users and telecommunications vendors. The latter two groups have formed an Alliance for Telephone Progress to seek changes in the legislation (story on page 2).

The original private-line increases and MTS/Wats decreases proposed by AT&T last Oct. 3 could be changed, AT&T said, because the company overestimated the access charges it would have to pay under the FCC's

See **RATES** page 2

Data base unit announced for IBM sites

By Paul Gillin
CW Staff

LOS ANGELES — Teradata Corp. today announced an integrated hardware and software data base computer for IBM mainframe environments that reportedly manages data bases of up to one trillion bytes.The fault-tolerant data base computer, dubbed DBC/1012, uses more than 1,000 Intel Corp. 8086 microprocessors running in parallel.

The DBC/1012 is believed to be only the second data base machine available for IBM mainframes. Software AG of North America, Inc. markets the Data Base Machine, a back-that includes the company's Adabas data base management system. However, Software AG has downplayed the processor in recent product literature.

Teradata's basic model includes six microprocessors equaling 12M bytes of main memory, 1.9G bytes of disk storage, relational software, host interface software and data base utilities. It performs 2.5 million instructions per second.

Parallel microcomputer modules and disk storage can be field upgraded to achieve a maximum of 409 Mips with a capacity of up to 2G bytes of main memory, a spokesman said. All modules communicate via Teradata's Ynet, a multiprocessor interconnection that distributes data and processing functions over multiple subsystems. Ynet broadcasts request messages to the microprocessors and merges their results in sequence, the

See **DBC** page 7

FYI

A fearless Fortran forecast: Redskins by six

By Bruce Hoard
Special to CW

LOS ANGELES — There have been times in the past when fearless Fortran forecaster Bud Goode has equivocated when asked to pick the next Super Bowl champion.

"I don't believe the computer," he complained.

"It's a dismal science," he decried.

No more. The computer says Redskins by six over the Raiders in Super Bowl XVIII, and that's good enough for Goode. The forthright forecaster was even willing to hazard a guess at the Jan. 22 event's final score: Washington Redskins: 21, L.A. Raiders: 17. Or 14. Something like that.

Goode's computer is a Sperry Corp. 1106 mainframe, and he uses it to compile a weekly 80-page readout that was sold to nine National Football League coaches and CBS commentator Dick Vermeil this past season. The software that drives the 1106 is based on a regression analysis that includes 130 variables covering virtually every phase of football.

Although not a betting man himself, Goode handicaps NFL games each week during the 16-week regular season for *The New York Post* and *The Philadelphia Enquirer*, among others. After experiencing stunning success against the line last year, he sank to two games below .500 against it this season. "I expected to fall out of bed this year because of statistical variations," he noted matter-of-factly.

During the course of the season, several teams jockeyed for statistical supremacy in Goode's Super Bowl race. In the American Football Conference, the L.A. Raiders did not emerge as the favorite until the 12th week. Before that, San Diego — Goode's preseason pick — Miami and Pittsburgh all enjoyed front-runner status. In the National Football Conference, Washington, the defending Super Bowl champion, supplanted Dallas as the favorite early in the season and stayed there.

In the Redskins-Raiders match, the Redskins are very strong statistically in ball control. According to Goode, the Super Bowl champions will typically run the ball 10 times per game more than their opponents during the regular season. The Redskins almost doubled that number, upping it to 17.

"It's a big edge because of the clock-eating ability," he pointed out.

Washington led the NFL in scoring with a 33.8 point average, a 40-percentile advantage over the Los Angeles defense, which relinquished a not-too-stingy 21.1 points per game.

See **BOWL** page 10

Wide World Photo

Redskins' John Riggins

NEWSPAPER

Alliance to monitor legislation

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — "To ensure passage of legislation responsive to the reasonable concerns of business and protective of America's technological future," several corporate communications users groups and trade associations last week announced they have formed the Alliance for Telephone Progress (ATP). The group's initial goal is to amend telecommunications legislation now before the U.S. Senate.

Meanwhile, in related actions:

■ The Reagan administration has announced it will oppose the pending Senate legislation (S. 1660) which would bar the Federal Communications Commission from putting its proposed access charge plan into effect. The Senate is likely to vote on S. 1660 next week.

The latest views of the Reagan administration on the pending legislation came in a statement made by a White House spokesman earlier this month claiming, "We support a deregulatory move as being in the best interest of the industry as well as individual consumers.

"We're concerned about initial consumer costs but believe that in the long term, these will iron themselves out."

■ AT&T offered to reduce its Message Toll Service/Wats rates beyond the levels promised last October and also offered to scale back increases in private-line rates proposed at that time (see story on page 1). The October announcement concerned a new interstate (between local access and transport areas) tariff, based on the FCC's access surcharges.

■ An AT&T spokesman said the company mailed nearly two million announcements of the new offer to its shareholders and employees, local opinion molders and the general public.

■ A knowledgeable Washington, D.C., source said the FCC is "caught between a rock and a hard place: While Congress objects to the access surcharge, the carriers and business communications users insist on it." He believes Congress and the commission will decide to defer the access charge for several months despite objections from users, telephone carriers and possibly Federal District Court Judge Harold Greene, who presided over the AT&T divestiture.

This Thursday the commission may act on petitions for further reconsideration of its access charge decision.

A press release issued by the newly formed ATP last week estimated that if S. 1660 or a similar measure in the House of Representatives (H.R. 4102) is enacted, their members' communications bills will increase between 40% and 200%.

Members of ATP include the International Communications Association, Association of Data Processing Service Organizations, Committee of Corporate Telecommunications Users, National Retail Merchants Association, Electronic Funds Transfer Association and Aeronautical Radio, Inc.

RATES from page 1

new plan.

However, "if the access charge plan were to be modified, either by commission action or congressional mandate, to reduce or to eliminate the fixed monthly end-user fee or to increase the amount of the discount for other common carriers, AT&T's ability to offer any rate reductions would be jeopardized.

"In fact, such changes could eliminate the MTS and Wats rate reductions already proposed in the Oct. 3 filing."

Key part of plan

A key part of the FCC's access charge plan is a fixed monthly surcharge of $2 per month per line on the local telephone company's residential users and up to $6 per month per line on business users.

The plan also calls for reducing the differential between what AT&T and the other common carriers now pay for access to local telephone networks. Other common carriers are now charged far less for lower quality interconnection, AT&T said.

AT&T said that, because of uncertainty concerning the FCC plan and the related access charges that local telephone companies will levy on AT&T and other long-distance carriers, it could not estimate how much more MTS/Wats rates might come down. But the company promised to pass on to customers all of the savings.

Criticisms rejected

AT&T rejected criticisms from users that the rate reductions proposed last October represented only about half of what it would save in reduced costs stemming from the FCC decision.

In the original tariff, AT&T increased individual private-line rates by widely varying amounts. Generally, the decreases were greatest for the most competitive offerings.

While charges for telegraph-grade service went up 85%, for example, those for 56K bit/sec Dataphone Digital Service (DDS) circuits dropped 38%. An AT&T spokesman said last week that, tentatively, the company now estimates that rates for telegraph-grade services will increase only 30.7%, while those for 56K bit/sec DDS will drop 44.6% (see table).

Column 1	Column 2 (Percent)	Column 3 (Percent)
Private-line services (overall)	15.3	7.9
Voice-grade services (overall)	16.9	10.3
Dataphone Digital Service (DDS)	-3.9	-21.2
2,400 bit/sec DDS	74.3	35.7
4,800 bit/sec DDS	19.9	-1.0
9,600 bit/sec DDS	0.5	-20.3
56K bit/sec DDS	-38.0	-44.6
Telegraph-grade services (overall)	85.0	30.7

The table above shows how present rates for specified services (Column 1) would be affected by AT&T's Oct. 3 tariff (Column 2) and by the possible revisions offered by the company last week (Column 3). All figures were supplied by AT&T, which emphasized that they are tentative.

FCC asks AT&T to justify rates further

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T last week received a 20-page letter from the Federal Communications Commission that asked for further justification of the post-divestiture rates the company proposed last October.

The pending tariff, scheduled to go into effect April 3, will "have a dramatic effect upon charges paid by subscribers," wrote Jack D. Smith, chief of the FCC's Common Carrier Bureau.

By next Monday, Jan. 23, Smith wants AT&T to answer a number of questions that the bureau's staff raised after perusing last October's filing and questions that customers raised in comments submitted to the FCC.

For example, the American Library Association, together with two regional library network operators, complained that charges for communicating over regional bibliographic networks would go up 37% to 84%.

AT&T was asked to respond to these and all of the other customer complaints individually. In each case, the FCC wants a breakdown of present and proposed charges and a comparison of the Total Service and Transport Circuits Service options offered in the tariff.

Under the former option, AT&T would provide an end-to-end service, obtaining the customer's local access facilities from the appropriate local telephone company. Under the latter option, the customer would acquire his own local access facilities, obtain the interexchange circuit from AT&T and retain responsibility for end-to-end testing and maintenance.

As part of its response to each customer complaint, AT&T was asked to "fully explain and justify price differences between . . . alternatives by rate element."

Other customer complaints included several from news services employing multipoint private lines comprised of voice-grade and telegraph circuits now provided under AT&T's Tariff 260.

"The contentions of unreasonable increased rates go both to recurring and nonrecurring charges proposed for these services," the commission's letter said.

The letter also reported that one multipoint network customer — Bunker Ramo Corp. — contends that "AT&T's recurring charges for terminating channels are substantially higher than would be incurred by customers acquiring them directly from [a local] exchange carrier."

Bunker Ramo reportedly also contended that, overall, the Total Service charge exceeds the cost of acquiring the service elements separately, under the Transport Circuits option, by 46% to 50%.

Port Authority bypasses Nynex for PBX

By David Myers
CW New York Bureau

NEW YORK — The Port Authority of New York and New Jersey has bypassed Nynex, the regional telephone holding company carved out of the old New York and New England telephone companies, to set up its own private branch exchange (PBX) at the Port Authority Bus Terminal here.

Closely following two other major bypass decisions in New York, the Port Authority decision raised questions about Nynex's ability to hold onto its lucrative Manhattan base.

AT&T Chairman Charles L. Brown told securities analysts here last month that Nynex was more vulnerable to bypass operations than were the other six operating companies because of the heavy concentration of business and government offices in Manhattan.

Purchased SL-1

The Port Authority purchased a $650,000 Northern Telecom, Inc. SL-1 digital PBX from Standard Telephone, a South Hackensack, N.J.-based dealer for Northern Telecom, and installed the system to handle its automatic call distributing. Jack Gavigan, supervisor of telecommunications services for the Port Authority, said the agency had gone to a Northern Telecom PBX out of unhappiness "with the service the telephone company provided. We were getting complaints from the general public attempting to get bus information."

Asked if officials at the Port Authority were concerned about weakening Nynex, Gavigan replied that "our real concern was whether they [Nynex] could be relied upon. It is increasingly the case that people in my position are becoming dissatisfied with the response time and other services" of what was formerly known as New York Telephone Co.

The Port Authority has now become the second public agency in the state to bypass the phone company, joining the New York State government in sealing a deal with an unregulated carrier [CW, Sept. 26].

VOTERS

Thanks for giving SyncSort 75% of the vote in IDC's 1983 Sort Survey.

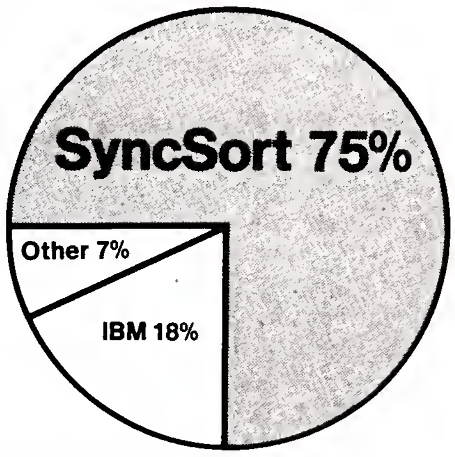
Call (201) 568-9700.

If you're still in the "sorting minority."

Ladies and gentlemen…sort users…fellow Americans: As we stand before you today on this windswept Inaugural Platform, clutching our notes, we are both very proud and somewhat puzzled.

We're proud that SyncSort has again been re-elected to office as "America's No. 1 Sort Program." It's now used by a whopping 75% of America's major data processors, according to the latest IDC sort survey. Here's the final vote tally:

SORT PROGRAMS IN USE IN THE U.S.*



But proud as we are of this achievement, we're puzzled, too. How come 25% of you are still procrastinating about SyncSort? You use the best hardware, and sooner or later you're going to want the best sort program to make that hardware work even better.

If you'll call, we'll prove to you that all three versions of SyncSort—OS, DOS and CMS—are clearly superior to their IBM counterparts in the three critical areas of sorting:

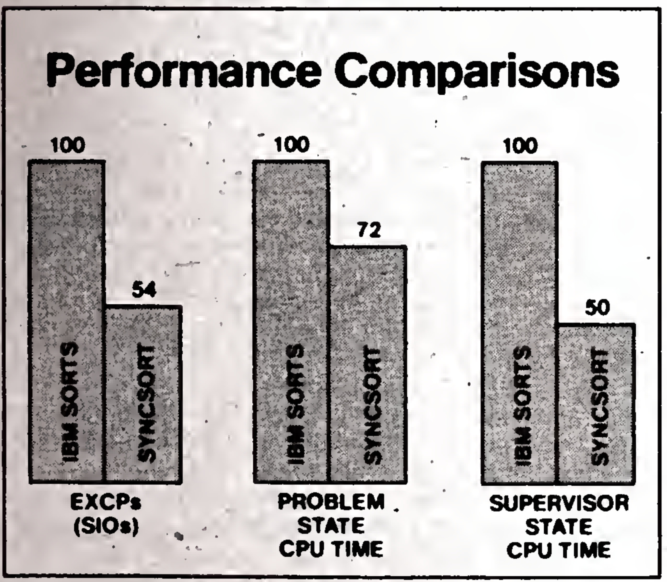
1. PERFORMANCE. Sorts have a built-in "Tammany Hall factor." If they run inefficiently, they can embezzle a great deal of your computer resources and corrupt your entire systems throughput.

SyncSort prevents this by keeping sorts honest. Because of the technological breakthroughs we pioneered—many of which are now patented—all three versions of SyncSort use far less computer resources than any of their IBM opposite numbers. Just how great the sort-performance gap has become can be seen by the charts at lower left.

2. PRODUCTIVITY. There's more to sorting than sorting. SyncSort is loaded with sophisticated features that make it easy to perform other important data-processing functions. Using these features, the time required for simple applications can often be reduced from five programmer days to one. Another reason why SyncSort has always carried the programmer vote!

3. SERVICE. We never forget who elected us to office. When you need sorting help, our Technical Service people will provide fast, accurate, courteous sorting advice. More than 85% of all customer inquiries are resolved within 24 hours.

To the 75% who cast their ballots for SyncSort, our warm thanks. And to the 25% who didn't, better call us today. Why postpone the inevitable?



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*According to IDC's Seventh Annual Survey of Sort Programs Used in OS and OS/VS.

IBM adds one System/38, scraps three, cuts prices

By Tom Henkel
CW Staff

RYE BROOK, N.Y. — IBM last week scrapped three older members of its System/38 processor lineup, announced a mid-range System/38 processor and slashed prices on the remaining two processors in the line.

Highlights of the announcement include:

- The introduction of the System/38 Model 6, a mid-range processor that reportedly offers 2M to 4M bytes of main memory and the ability to connect up to 128 local workstations. The Model 6 replaces the older Model 5 and Model 7 processors, which IBM will no longer market. IBM said the Model 6 offers about 25% more internal performance than the Model 5, with a purchase price of about 8.9% less.
- The elimination from the System/38 family of the entry-level Model 3, a processor that many industry watchers maintained did not offer enough main memory to fulfill users' needs. Most agreed the Model 3 was never a strong contender in the System/38 lineup.
- Decreases in the purchase prices of the remaining two processors in the System/38 line by as much as $32,500 on the Model 8 and $17,500 on the Model 4. IBM also made some minor enhancements to those processors.
- The announcement of an electronic spreadsheet program, Worksheet/38, as part of IBM's Office/38 program product.

Faster storage cycle time

The System/38 Model 6 features a control storage cycle time of 133 nsec, compared with 200 nsec on the older Model 5. Main memory cycle time on the processor is 400 nsec, compared with 600 nsec on the Model 5, IBM said.

The Model 6 is available in 2M-, 3M- and 4M-byte memory configurations. The Model 5 offered 1M, 1.5M and 2M bytes of main memory.

In addition, the Model 6 can accommodate 12 more local workstations than the Model 5, IBM noted.

The Model 6 processor with 2M bytes of main memory, 794M bytes of disk storage, 20 workstations and a system printer costs $180,423. The unit costs $3,561/mo on a five-year lease plan. A similarly configured Model 5 processor formerly cost $189,453.

The Model 6 will be available in March, IBM said.

Models 4, 8 enhanced

Besides getting price cuts, the Model 4 and Model 8 processors also were enhanced. Presumably to fill the void left by the Model 7 processor, the Model 8 is available with 2M- or 3M-byte memory configurations; its previous minimum main memory capacity was 4M bytes.

The Model 4 can accommodate 12 additional local workstations, raising the maximum number of terminals from 20 to 32. The additional terminals can be attached without an expansion feature, IBM said.

The newly announced spreadsheet program, Worksheet/38, enables users to develop relational models for planning and budgeting applications. The package, which can access information stored in a System/38 data base, is available for a one-time charge of $2,700, an IBM spokesman said.

Last week's System/38 announcements were made through IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10573.

IBM SYSTEM/38 LINEUP

System / Characteristics	System/38 Model 4	System/38 Model 6	System/38 Model 8
Relative Performance[1]	13	20	32
Mips[2]	.2	.3	.52
Memory Size In Bytes (Minimum-Maximum)	1M-2M	2M-4M	2M-8M
Purchase Price[3] (Memory Size)	$49,140 (1M)	$87,903 (2M)	$137,500 (4M)
Lease Price (Lease Term)	$2,903 (3 Year)	$1,754 (5 Year)	$8,400 (3 Year)
Machine Cycle Time (Nsec)	1,100 (Per 4 Bytes)	400 (Per 4 Bytes)	400 (Per 4 Bytes)
Channels[4] (Minimum-Maximum)	1	1	1
Cache (Buffer) Size	None	None	None
Bus Architecture?	No	No	No
Price per 1M Byte Of Main Memory	$7,500	$7,500	$7,500

1. CW estimates based on vendor-supplied information. Relative performance ratings are based on an IBM 370/158-3 equalling 45. These numbers are designed to put the processor into perspective with other systems; they do not constitute a buyer's guide. All systems are not alike; they use different operating systems, instruction sets and architectures and therefore cannot be directly compared. In addition, actual relative performance may vary with the application, peripherals and software.
2. CW estimates.
3. For the processor only.
4. The System/38 has one channel through which many devices can be used.

NCR unveils terminal system to fit IBM's 3270, SNA/SDLC

DAYTON, Ohio — Citing its intention to offer communications compatibility with IBM, NCR Corp. last week announced a general-purpose cluster terminal system that is compatible with IBM's 3270 line of terminals and IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC).

The NCR 7950 terminal system is comprised of either 15-in. monochrome display terminals (green or amber) or 14-in. color display terminals, a 200 char./sec printer and a controller that can support up to 32 CRT terminals or printers. The controller is based on a Motorola, Inc. 68000 microprocessor.

NCR plans to market the unit to large corporations that have a need for clustered CRT terminals that can communicate with a host processor in a 3270 SNA/SDLC environment. A spokesman said NCR is targeting both NCR users and users of other vendors' systems.

According to NCR, the 7950 can be used in lieu of a microcomputer, but the company did not elaborate.

The introduction of the NCR 7950 marks the first time NCR has announced a 3270-compatible product, the spokesman added.

Features of the 7950 include a data field storage facility for commonly used word sets. The feature can be recalled on the screen as needed.

In addition, a printer buffer is available to store screen contents when the printer is busy.

Add-on features

The 7950 was designed to enable customers to buy entry-level configurations similar to the IBM 3178 CRT terminal introduced last year [CW, March 14]. The 7950 accommodates add-on features, many of which are user installable and do not require users to replace CRT terminals, the vendor said.

Other features include a tilt-and-swivel display, 24 function keys and a 10-key numeric pad.

The 7950's basic monochrome display terminal costs $1,395. A seven-color display terminal costs $3,350, and a printer for the unit costs $5,000. The 68000-based controller costs $6,000.

NCR's world headquarters is located at 1700 S. Patterson Blvd., Dayton, Ohio 45479.

IBM doubles memory on System/36 to 1M byte

X.25 support also announced

RYE BROOK, N.Y. — Besides adding to and subtracting from its line of System/38 processors last week, IBM also doubled from 512K to 1M byte the maximum main memory available on the smaller System/36.

In addition, the firm announced support for the X.25 communications protocol on the System/36 and introduced a remote cluster controller.

All System/36 configurations are available with a main memory maximum of 1M byte. The main memory enhancement is available in 256K-byte increments, which cost $2,500 each.

Disk storage expanded

The maximum amount of disk storage for the System/36 has also been expanded, from 400M to 800M bytes. The disk storage expansions are available in 200M-byte increments, costing $17,500.

Both memory enhancements will be available in May. A System/36 processor with doubled main memory and disk storage is priced at $107,600.

Further System/36 enhancements announced last week include the ability to add six extra local workstations, bringing the maximum number of local workstations to 36. That means up to 100 local and remote workstations can be added to the System/36; the previous maximum was 94.

The System/36 can be used in an X.25 network operating at 2,400, 4,800 or 9,600 bit/sec.

The remote cluster controller features an external modem adapter operating at 2,400 to 19.2K bit/sec; distributed data services operating between 2,400 and 56K bit/sec; and support for the X.21 and X.25 communications protocols. The unit costs $2,950 and will be available in May, according to the vendor.

More information is available from IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10573.

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‘CA-Executive’ integrates software for IBM micro

Offers applications, mainframe link, multitasking, windowing

By Paul Gillin
CW Staff

JERICHO, N.Y. — Computer Associates International, Inc. last week announced a software product for the IBM Personal Computer that integrates a range of popular applications software, an intelligent link to IBM mainframes, multitasking capability and a window manager.

Called CA-Executive, the product will be geared toward Fortune 1,000 companies in which microcomputer users are buying too many different kinds of micro software, according to Charles Wang, Computer Associates president. In a departure from its traditional sales strategy, the company will sell CA-Executive to executive end users as well as to data processing personnel.

Computer Associates is providing discounts of nearly 50% for orders of more than 50 copies of the product, whose single-unit price is $1,295.

Slated for availability in April, CA-Executive includes a data base management system (DBMS) called CA-DBMS that incorporates a command structure virtually identical to that of CA-Universe, the company's mainframe relational DBMS.

Other programs in CA-Executive include a spreadsheet (CA-Calc), word processing (CA-Writer), editing (CA-Edit), graphics (CA-Graph), forms generation (CA-Form), mainframe linkage software (CA-Link) and on-line tutorial (CA-Tutor).

Windowing allows multiple programs to be displayed simultaneously; data can be transferred back and forth between windows.

The link to the mainframe offers on-line uploading and downloading, communications with other Personal Computers on a network and terminal emulation for performing functions on mainframe applications. The software includes an intelligent file transfer capability, IBM 3270 terminal emulation, access to any subset of a CA-Universe data base and dumb terminal emulation for access to external data bases.

Security is administered by the data processing department, and invalid data cannot be transmitted via CA-Link, a spokesman said.

CA-DBMS is a relational DBMS that includes a report writer and security to the field level. CA-Writer is a version of Easywriter II from Information Unlimited Software, Inc., a Computer Associates subsidiary, that includes text and word processing, a spelling checker and electronic mail capability.

CA-Calc is an electronic spreadsheet that is integrated with CA-DBMS to allow data to be transferred between the components without reformatting. CA-Edit is a programmer-oriented tool that provides facilities for processing data, creating and editing files, writing and executing programs and generating reports.

CA-Form is a menu-driven screen painter designed primarily for creating screens, forms and reports. CA-Graph produces most standard graphs in full color. Graphs can be transferred into other windows for composite reports. CA-Tutor is an on-line tutorial that complements written documentation. PC-DOS lets any IBM PC-DOS program execute within a CA-Executive window.

When used with CA-Universe on the mainframe, CA-Executive allows users to manipulate, update and access data within CA-Universe and download a subset of the data or a new table to the micro. The window manager reportedly can be manipulated by function keys or a mouse. Utility windows include a directory, print spool, clock, notepad and Help functions.

CA-Executive is written in C on a Unix operating system with a PC-DOS translator that makes multiprocessing possible, according to Wang.

Computer Associates is at 125 Jericho Tnpk., Jericho, N.Y. 11753.

IBM micro gets Unix look-alike

RYE BROOK, N.Y. — IBM announced last week that it will offer an optimized version of Bell Laboratories, Inc.'s Unix operating system for its Personal Computer and Personal Computer XT microcomputers.

The operating system, called the Personal Computer Interactive Executive (PC/IX), was adapted for use on the IBM micros by Interactive Systems Corp., according to an IBM spokeswoman. She added that PC/IX can run virtually all Unix programs commercially available for microcomputers.

The operating system is available for a one-time license fee of $900 and will be marketed though IBM's National Accounts and National Marketing Divisions.

2 Trillion

Last night we backed up
two trillion (yes, that's 12 zeroes)
characters of data, and
checked our work.

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IBM, NAS settle case

Suit over trade secrets theft

By Jeffry Beeler
CW West Coast Bureau

SAN JOSE, Calif. — A civil suit in which National Semiconductor Corp. and its National Advanced Systems, Inc. (NAS) subsidiary were accused of stealing IBM trade secrets was settled out of court last week.

In return for IBM's promise to drop all claims against the two defendants, National Semi agreed to pay all the industry giant's legal fees stemming from the 16-month-old suit. The fees total $3 million — a pittance compared with the $750 million to $2.5 billion in damages that IBM threatened last Nov. 15 to demand from NAS and its parent company.

Last week's agreement also gave IBM the temporary right to scrutinize each of NAS' future products prior to first-customer shipment, according to an affidavit filed in U.S. District Court. The purpose of the inspection provision, which expires on Oct. 1, 1988, is to satisfy IBM that none of the company's allegedly stolen trade secrets finds its way into NAS' new processors and other systems modules.

In addition to providing an advance look at the products themselves, the defendants will be required to give IBM access to all NAS' accompanying systems specifications, users manuals, principles of operation and related materials, the affidavit said.

If the two sides disagree over whether a future NAS product incorporates proprietary IBM technology, the dispute will be referred to a three-member arbitration panel whose rulings will be binding.

The panel will consist of one representative from both IBM and NAS, as well as a chairman to be chosen jointly.

In other provisions of last week's settlement, National Semi and NAS have agreed to refrain from using IBM's trade secrets in their new product development and to return any proprietary technology they may receive in the future.

NAS: 'We're quite pleased'

Asked for his reaction to the Jan. 9 settlement, NAS President David Martin voiced relief that his company's long legal ordeal had finally ended. "We're quite pleased with the settlement," he said during a Jan. 10 interview. "The agreement bodes well for the firm's future and eliminates much of the fear, uncertainty and doubt" that IBM's suit had created in the minds of both market analysts and NAS' own customers, he said.

Although National Semi and NAS have steadfastly maintained their innocence in the trade-secrets theft case, they settled the suit anyway, because "nobody, not even the government, has the resources to compete with IBM's legal technology," Martin said.

Since its inception in September 1982, National Semi's legal wrangle with IBM had seriously tarnished NAS' image in the eyes of certain stock analysts and potential investors, Martin said. The civil suit had also prompted at least a few otherwise promising sales prospects to question the Mountain View, Calif.-based firm's viability as a systems vendor.

Roots of the case

In many respects, last week's settlement was closely patterned after a related out-of-court agreement that IBM reached on Oct. 6 with National Semi's Tokyo-based processor supplier, Hitachi Ltd., another defendant in Big Blue's civil suit. The complaint against Hitachi, NAS and National Semi stemmed from a widely publicized industrial espionage case in which two major Japanese electronics vendors were accused of conspiring to steal proprietary IBM systems technology.

To obtain the trade secrets, the conspirators reportedly paid a total of nearly $650,000 to Federal Bureau of Investigation undercover agents posing as electronics black marketers.

Hitachi later pleaded guilty to one count of conspiring to transport stolen property and received the maximum penalty under U.S. law.

In their Jan. 9 court filing, NAS and its parent company repeated their long-standing contention that neither organization had used the pilfered IBM technology, which included MVS/SP Version 2 source code and hardware designs for the 3080 system.

All the IBM product information in the defendants' possession has already been returned to its owner, the papers added.

MSA stock plunges 25% in reaction to flat earnings

By John Gallant
CW Staff

ATLANTA — Despite anticipated record revenues of $145 million in 1983, Management Science America, Inc.'s (MSA) stock plunged more than 25% last Monday, fueled largely by its announcement of flat per-share earnings and a marked decrease in the rate of profit growth in 1983.

While MSA's release of preliminary year-end figures showed that 1983 revenues would hit $145 million, up 44% over 1982, pretax profits are expected to increase only 38% and earnings to rise only 17%. That figure represents a sharp drop from the 63% earnings growth reported the previous year.

The most significant announcement, however, was that MSA anticipates 1983 earnings per share to remain at 1982's 62-cent level. It was that news that sent MSA's stock into a tailspin, dropping from $30 per share to $22.25 at the close of business Monday. At midweek, MSA shares traded at $23.

Commenting on MSA's year-end results, Chairman and Chief Executive Officer John P. Imlay Jr. said the software firm "on balance [was] pleased with the progress made in strengthening our leadership position within the industry." However, Imlay said that foreign revenues, which fell below targeted levels, and a substantial tax rate increase stemming from the "decision to treat [research and development] tax credits in a conservative manner" were problems for the firm.

In addition, MSA announced that while revenues from sales of its manufacturing software quadrupled in 1983, they were still lower than expected. According to President William Graves, manufacturing software sales, such as those for the firm's material requirements planning system, accounted for between only $4 million and $5 million, a figure "below what we wanted."

'Skittish market'

Harry Edelson, vice-president of First Boston Corp., said MSA's stock dip was indicative of a "skittish market in technology issues.

"Wall Street was looking for growth," Edelson said. "A growth company is supposed to grow, and if it doesn't, that's a big problem. When flat earnings come as a surprise, that's a warning that things could get worse. We're seeing a bear market in technology stocks right now as it is. Many are selling from one-half to one-third less than their price a year ago."

Edelson also said MSA's flat earnings might have spurred profit taking among investors.

Robert O'Connor, financial analyst for Tucker, Anthony & R. L. Day, Inc., agreed with Edelson's assessment. In addition, O'Connor cited an estimated tax increase of close to 9% during 1983 and an increase of 19% in the number of MSA's outstanding shares as factors behind the stagnant per-share earnings.

Graves said the company's failure to attain target revenue levels in foreign markets was the most significant difficulty MSA encountered last year. He cited a goal of nearly $35 million in foreign revenues, a level that MSA missed by some $7 million.

Imlay said MSA is "re-evaluating how [it] operates in certain foreign markets in order to improve profits." In addition, the firm will stress the marketing of its manufacturing and order processing products, moves which Imlay predicted would boost 1984 revenues by 35% and earnings per share to more than $1.

NAS to service Magnuson M80s

By Jeffry Beeler
CW West Coast Bureau

MOUNTAIN VIEW, Calif. — Customers who lease Magnuson Computer Systems, Inc.'s M80 series processors from Phoenix Leasing, Inc. will soon gain the option of having their hardware and software maintained by National Advanced Systems, Inc. (NAS).

In principle, NAS agreed early this month to serve as the third-party service representative for Phoenix Leasing's base of Magnuson mainframes, which are plug-compatible with IBM's medium-scale CPUs. Announced Jan. 6, the arrangement marks NAS' debut as a provider of third-party systems maintenance and support services, said NAS Director of Marketing Services Pat Case.

Under the proposed agreement, Phoenix Leasing's M80 users can request NAS' optional Total Support Package, which covers user education and software maintenance, as well as service for any model of IBM or IBM-compatible processor or peripheral. Customers also may opt instead to limit NAS' Magnuson-related support activities to hardware maintenance alone.

The service agreement also calls for Phoenix Leasing, based in Mill Valley, Calif., to give NAS access to its large inventory of M80 spare parts, Case noted.

Many of the parts found their way into Phoenix Leasing's hands from Magnuson's UK subsidiary, which recently declared bankruptcy, said Frank Juliano, the leasing company's director of technical operations.

The agreement in principle is expected to take effect formally soon, probably by the end of the month, according to Alan Cade, NAS' vice-president of strategic business services.

Juliano expects the association between Phoenix Leasing and NAS to be "phased in gradually." As contracts with the leasing company's existing Magnuson users gradually expire, the customers will be allowed to take one of two courses of action: either renew their current service agreements or transfer their maintenance and support business to NAS.

Future users of Phoenix Leasing's Magnuson systems, meanwhile, will receive their maintenance and support almost exclusively from NAS.

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ANALYSIS

One market that's not bustling

With its introduction last week of a data base machine for large IBM mainframe environments, Teradata Corp. set its sights on a potentially plentiful market that may also harbor serious dangers.

While many of the largest software firms have explored the feasibility of data base machines in recent years, the market is notable for its lack of activity.

From a cost-efficient standpoint, the technology just has not seemed that attractive, according to Ron Ross, editor of the "Data Base Newsletter."

"The question is whether you can improve productivity enough to make up for the cost of the technology, and so far the answer has been No," Ross said in an interview last week. "Nobody wanted to get out there with a machine that would produce improvements for a year or two only to come up against improved price/performance ratios from the mainframe. IBM has kept that ratio improving so they don't come up against that kind of competition."

Invested $27 million

Teradata has invested $27 million and four years of development in the belief that data base machines are now viable, according to David Clements, Teradata's manager of product marketing.

Clements claimed the market has been weak because current data base machines "are targeted toward an area in which there's not a data base problem yet" because the data bases are relatively small.

Diminishing hardware costs and spiraling personnel expenses in recent years have underscored the importance of improving mainframe response times, Clements said. "With [IBM] IMS programmers making as much as $55,000 a year, hardware has become the cheapest concern."

'Linear improvement'

Teradata believes its data base machine will survive competition from improving mainframe technology by offering power that is based on low-cost microprocessors, which can be added as processing requirements expand. "Adding microprocessors results in a linear improvement of performance," Clements explained.

Ross said the use of a relational data base management system may make machines such as Teradata's DBC/1012 viable. "With relational systems, you're specifying a request for a whole table of data," he said. "This means the amount of communications between the data base machine and the mainframe is minimized."

A large machine of this kind could be useful to companies that are planning on distributing their data base processing, according to Ross.

DBC

from page 1

spokesman said.

The computer employs a relational-model DBMS using the Teradata query language, Tequel, an IBM SQL-like language for data manipulation, query and control.

The Interactive Query Language (Iteq) is provided for nontechnical users employing a terminal connected to the mainframe.

Relieved processing load

DBC/1012 attaches to the host on a block multiplexer channel and communicates source code with the mainframe.

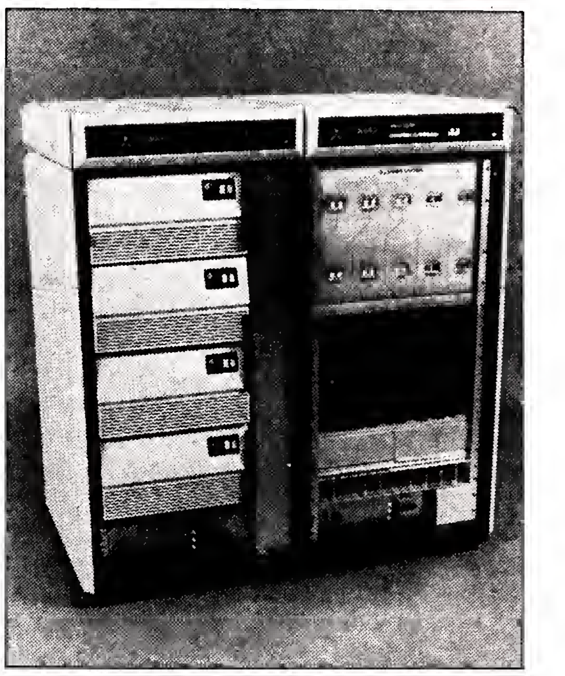
In benchmark tests, according to the spokesman, the data base machine relieved the host of about 40% of the processing load in intensive data base applications.

DBC/1012 will be marketed to IBM MVS sites in very large companies with data bases that approach 1T byte, according to David Clements, Teradata's manager of product marketing.

"When you get to that kind of user, the magnitude of data base problems is tremendous," he said.

Available immediately, the basic DBC/1012 system is priced at $480,000. Add-on components are priced at approximately $60,000 per Mip and $37 per 1M byte of add-on disks, according to a spokesman for the vendor.

Additional information on the DBC/1012 can be obtained from Teradata, which is headquartered at 12945 Jefferson Blvd., Los Angeles, Calif. 90066.



Teradata DBC/1012

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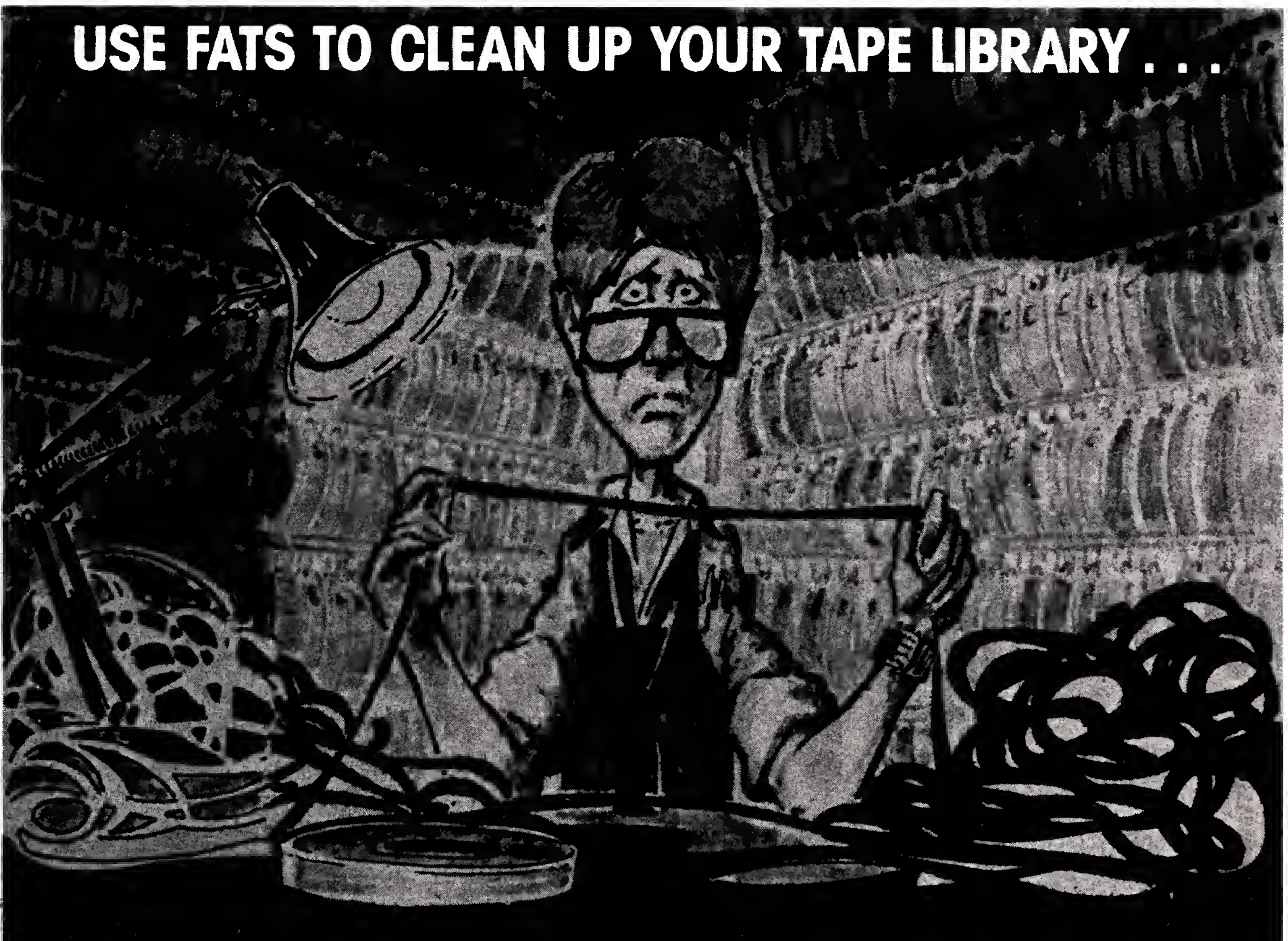

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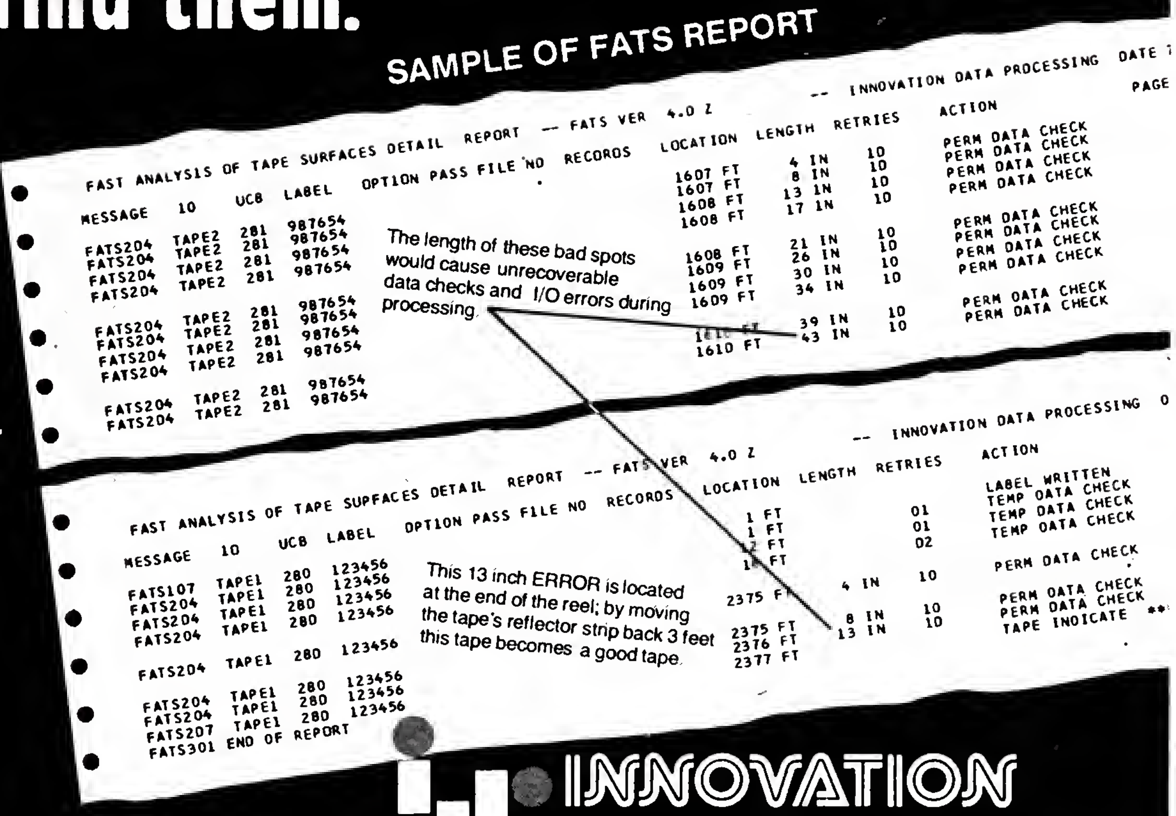

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FAST ANALYSIS OF TAPE SURFACES DETAIL  REPORT  -- FATS VER  4.0 Z        -- INNOVATION DATA PROCESSING  DATE
                                                                                                          PAGE
MESSAGE   IO   UCB  LABEL   OPTION PASS FILE NO  RECOROS   LOCATION  LENGTH  RETRIES   ACTION
FATS204  TAPE2  281  987654                                 1607 FT    4 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1607 FT    8 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1608 FT   13 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1608 FT   17 IN    10      PERM DATA CHECK

FATS204  TAPE2  281  987654                                 1608 FT   21 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1609 FT   26 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1609 FT   30 IN    10      PERM DATA CHECK
FATS204  TAPE2  281  987654                                 1609 FT   34 IN    10      PERM DATA CHECK

FATS204  TAPE2  281  987654                                 1610 FT   39 IN    10      PERM OATA CHECK
FATS204  TAPE2  281  987654                                 1610 FT   43 IN    10      PERM DATA CHECK
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The length of these bad spots would cause unrecoverable data checks and I/O errors during processing.

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FAST ANALYSIS OF TAPE SUPFACES DETAIL  REPORT  -- FATS VER  4.0 Z        -- INNOVATION DATA PROCESSING  O
MESSAGE   IO   UCB  LABEL   OPTION PASS FILE NO  RECORDS   LOCATION  LENGTH  RETRIES   ACTION
                                                                                       LABEL WRITTEN
FATS107  TAPE1  280  123456                                 1 FT              01      TEMP OATA CHECK
FATS204  TAPE1  280  123456                                 1 FT              01      TEMP OATA CHECK
FATS204  TAPE1  280  123456                                 2 FT              02      TEMP OATA CHECK
FATS204  TAPE1  280  123456                                 1  FT
                                                                                       PERM DATA CHECK
FATS204  TAPE1  280  123456                              2375 FT     4 IN     10
                                                                                       PERM OATA CHECK
FATS204  TAPE1  280  123456                              2375 FT     8 IN     10      PERM DATA CHECK
FATS204  TAPE1  280  123456                              2376 FT    13 IN     10      TAPE INOICATE **
FATS207  TAPE1  280  123456                              2377 FT
FATS301  END OF REPORT
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This 13 inch ERROR is located at the end of the reel; by moving the tape's reflector strip back 3 feet this tape becomes a good tape.

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Lower cost, flexibility cited as CBT advantages

By Patricia Keefe
CW Staff

NEW YORK — Reduced costs and increased flexibility are the most frequently cited advantages of computer-based training (CBT), according to a survey conducted recently by RSA Information Designs, Inc., a communications and training consulting firm here.

Moreover, IBM's equipment is the hardware of choice for many current and prospective CBT users, according to "The Market for Computer-Based Training in Business and Industry — 1983," the report on the survey's results.

The report is based upon the responses of 74 people in 68 Fortune 500 firms and government agencies regarding their current and planned use of CBT. Fifty-three percent of the 74 work in DP and/or technical training, and 47% work in human resources training — predominantly in financial services, insurance and manufacturing.

Although 60% of the 68 firms polled do not offer CBT, 46% of that group plan to introduce CBT within one year and 17% within two to five years.

Of those organizations currently offering CBT, most use it primarily to provide training in DP and technical skills and in software application usage. However, they are considering using CBT to teach a wider range of topics, the study said.

For example, while product knowledge and management development topics make up about 4% of current courseware, they represent 29% of potential future offerings. Also, basic, clerical and selling skills courseware represents 8% of current offerings and 22% of possible future offerings.

Advantages and difficulties

Among the benefits anticipated from CBT are reduced costs as a result of reduced travel to take training courses, study respondents reported. Other participants pointed to the benefits of student self-pacing and open scheduling, which they said provide flexible, accessible training.

Moreover, the study found that respondents credit CBT with fostering improved or faster learning and course-completion rates.

The greatest difficulty associated with CBT usage was focused on authoring or developing courseware (32%), the management of resources and facilities (22%) and cost (12%), according to the study.

The study found that beyond the typical courses in DP or data entry, courses in use or in the planning stages range from equipment skills training to insurance or financial product knowledge to interviewing and marketing skills. Current courseware, however, appears to include few options, the study said. Color graphics is most frequently cited (35%), followed by touch-panel input (25%). Future courses may be more interactive video; videotape (25%) followed by both videodisk and color graphics (18% each) were most frequently cited as future options.

Of the available courseware, off-the-shelf programs were found to exceed in-house or custom-made products, representing 59% of the current choices and 57% of the planned choices. "Nonusers are overwhelmingly interested in purchasing their courseware," the study said, adding that 74% of the 23 nonuser respondents expressed an interest in purchasing primarily off-the-shelf courseware, but would consider custom-made programs as well.

Conversely, current users are looking either to author their own courses or to contract for custom-made programs.

Once purchased, these programs are most often run on microcomputers in general and IBM hardware in particular — both mainframes and micros. The study found that terminals connected to a mainframe are currently the primary CBT delivery system (51%), followed by micros (38%) and minis (11%). Micros, however, represent 36% of delivery systems under consideration for future use compared to 19% each for mainframes and minis.

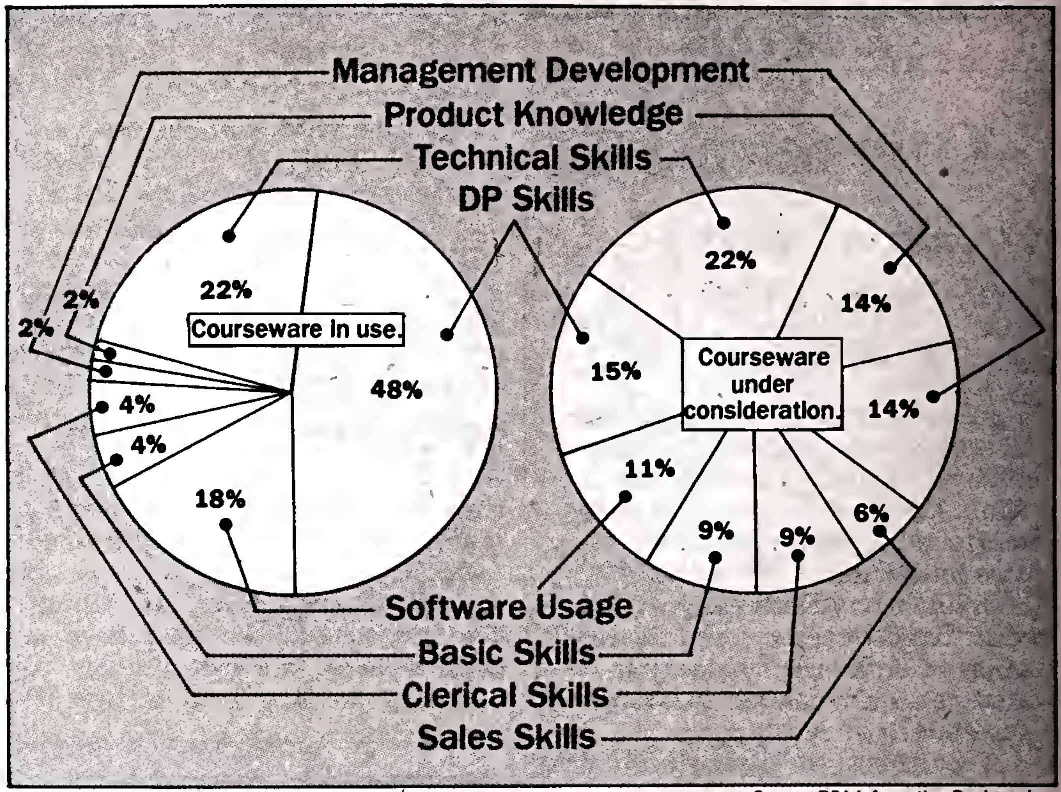
Of the mainframe equipment in use today among study respondents for CBT delivery, the choice of the users polled was overwhelmingly IBM (90%). Current micro usage was found to be divided almost equally between IBM and Apple Computer, Inc. (45% each). As for possible future brand choices, IBM is the sole mainframe under consideration and the micro choice of more than half the organizations citing specific hardware (58%).

"IBM, in fact, was cited by a few firms as their possible future choice without specifically stating whether mainframe or micro," the study said, adding that only 17% of the respondents were considering Apple micros.

Not only are CBT users favoring IBM hardware, but there appears to be a trend toward using IBM-compatible authoring systems to develop or implement courseware, the report continued. The most popular mainframe authoring system in use among survey respondents (95%) was IBM's Interactive Instructional System. It and Goal Systems International, Inc.'s Phoenix were the top choices under consideration for future use.

For microcomputers, the most popular authoring system in use is Bell & Howell Co.'s Pass for the Apple (45%), but IBM Personal Computer authoring systems such as McGraw-Hill, Inc.'s Interactive Authoring System (43%) or Computer Systems Research, Inc.-developed Trainer 3000 (29%) are among those under consideration for future use. Pass was not cited at all.

The report costs $185. RSA Information Designs is located at 201 E. 17th St., New York, N.Y. 10003.



Source: RSA Information Designs, Inc.

Comtec meet set for Feb. 20-23

SAN JOSE, Calif. — Comtec, a nonprofit organization that supports the advancement of computer output micrographics (COM) technology, will hold its 14th annual conference Feb. 20-23 at the Westin Miyako Hotel in San Francisco.

A dozen speakers will address subjects related to COM. Arnold Keller of Hitchcock Publishing, the keynote speaker at the conference, will discuss "COM and Information Resource Management."

Other speakers include Kevin Fitzgerald of Bell & Howell Co., Karen Voigt of Minolta Corp., Dr. Terry Sonnonstine of 3M Co. and Michael Hughes of Rio Grande Micrographics.

Sessions at which vendors present their products and services will also be featured at the conference, and the seventh Ed Rosse Award will be presented for the most significant contribution to the COM field.

Cost for the three-day conference, including a Japanese Yomise St. Gala dinner on Feb. 22, is $295 before Jan. 20 and $320 after Jan. 20. One-day registration is $140.

Comtec can be reached at Suite 200, 100 N. Winchester Blvd., San Jose, Calif. 95128.

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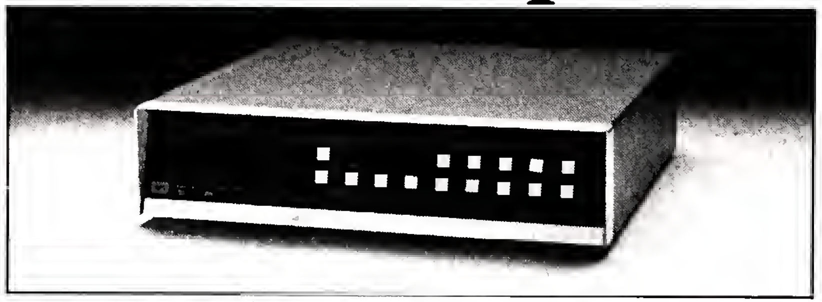

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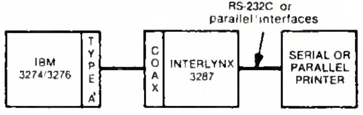

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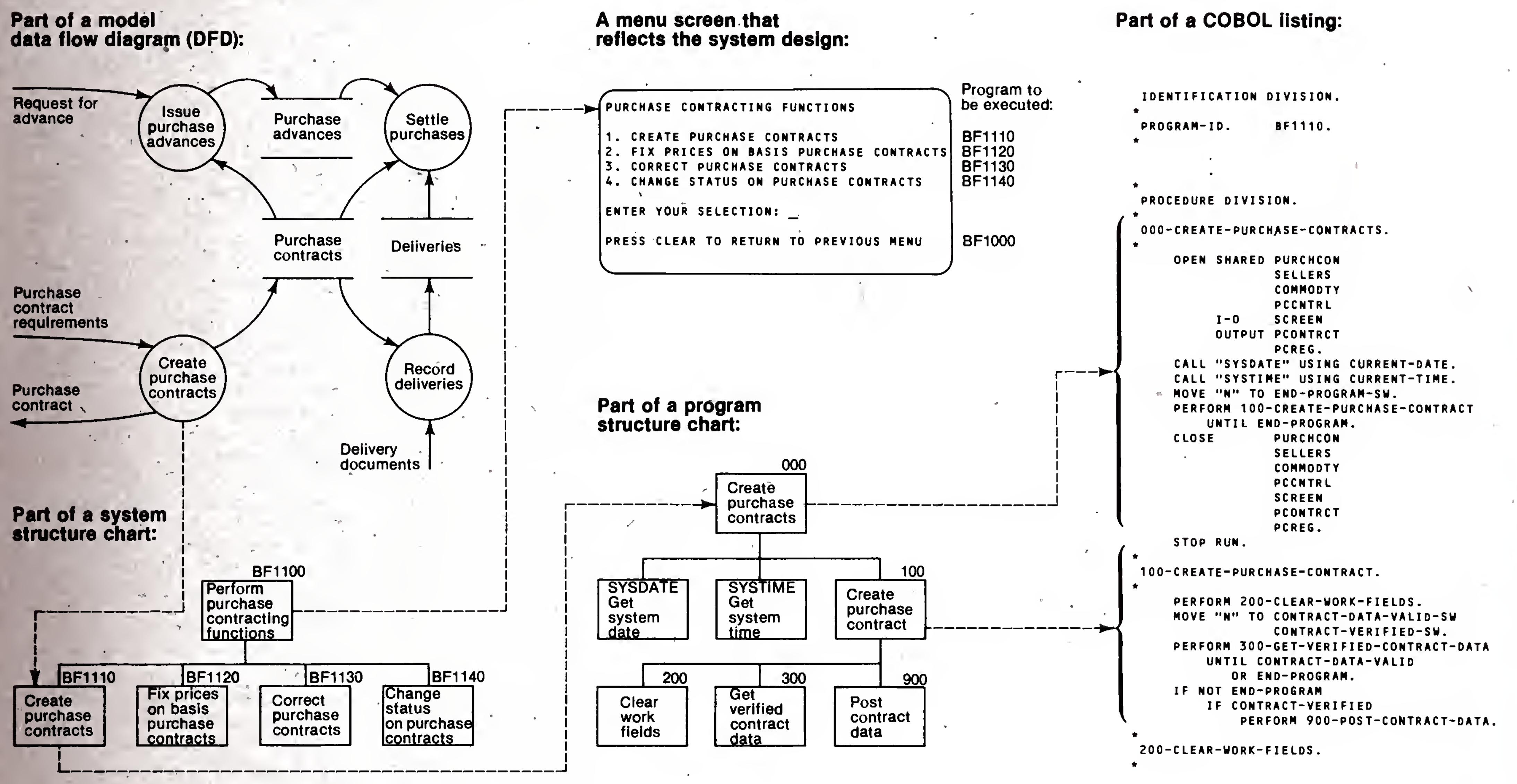
Does your system documentation tie together like this?


Part of a model data flow diagram (DFD):
Request for advance
Issue purchase advances
Purchase advances
Settle purchases
Purchase contracts
Deliveries
Purchase contract requirements
Create purchase contracts
Purchase contract
Record deliveries
Delivery documents
Part of a system structure chart:
BF1100
Perform purchase contracting functions
BF1110
Create purchase contracts
BF1120
Fix prices on basis purchase contracts
BF1130
Correct purchase contracts
BF1140
Change status on purchase contracts
A menu screen that reflects the system design:
Program to be executed:
BF1110
BF1120
BF1130
BF1140
BF1000
Part of a program structure chart:
000
Create purchase contracts
SYSDATE Get system date
SYSTIME Get system time
100
Create purchase contract
200
Clear work fields
300
Get verified contract data
900
Post contract data
Part of a COBOL listing:

```
PURCHASE CONTRACTING FUNCTIONS

1. CREATE PURCHASE CONTRACTS
2. FIX PRICES ON BASIS PURCHASE CONTRACTS
3. CORRECT PURCHASE CONTRACTS
4. CHANGE STATUS ON PURCHASE CONTRACTS

ENTER YOUR SELECTION: _

PRESS CLEAR TO RETURN TO PREVIOUS MENU
```

```
 IDENTIFICATION DIVISION.
*
 PROGRAM-ID.     BF1110.
*
        .
        .
*
 PROCEDURE DIVISION.
*
 000-CREATE-PURCHASE-CONTRACTS.
*
     OPEN SHARED PURCHCON
                 SELLERS
                 COMMODTY
                 PCCNTRL
          I-O    SCREEN
          OUTPUT PCONTRCT
                 PCREG.
     CALL "SYSDATE" USING CURRENT-DATE.
     CALL "SYSTIME" USING CURRENT-TIME.
     MOVE "N" TO END-PROGRAM-SW.
     PERFORM 100-CREATE-PURCHASE-CONTRACT
         UNTIL END-PROGRAM.
     CLOSE       PURCHCON
                 SELLERS
                 COMMODTY
                 PCCNTRL
                 SCREEN
                 PCONTRCT
                 PCREG.
     STOP RUN.
*
 100-CREATE-PURCHASE-CONTRACT.
*
     PERFORM 200-CLEAR-WORK-FIELDS.
     MOVE "N" TO CONTRACT-DATA-VALID-SW
                 CONTRACT-VERIFIED-SW.
     PERFORM 300-GET-VERIFIED-CONTRACT-DATA
         UNTIL CONTRACT-DATA-VALID
            OR END-PROGRAM.
     IF NOT END-PROGRAM
         IF CONTRACT-VERIFIED
             PERFORM 900-POST-CONTRACT-DATA.
*
 200-CLEAR-WORK-FIELDS.
*
```

In most of the system-development methods I've seen, the system documentation doesn't tie together at all. Instead, it simply points up the shortcomings of the development methods used.

The analysis documents don't lead you into design, and the design documents don't lead you into implementation. They don't help you make the decisions that affect the success of the system the most. They focus on details instead of on critical factors. They're hard to maintain, so they aren't kept up-to-date. They don't tell maintenance programmers whether one program change will affect other parts of the system, too.

At last, a system-development method that offers some solutions

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- cut down on paperwork that no one else ever looks at
- create data flow diagrams (DFDs) to analyze an existing system and to model the new system (a DFD shows what data goes into and out of a system and what happens to the data in between)
- use your model DFD to figure out what data elements you need in the new system
- use your model DFD to create a system structure chart that breaks the system down into its logical functions
- use the system structure chart to create menus for interactive systems, to plan programs, and to decide which parts of the system you should do first
- make the right decisions about organizing the database or files so you save hours (or days or months) of re-programming
- get the user to find analysis and design errors early, before the corrections get expensive
- create a program overview that tells what a program must do, but lets the programmer decide how to do it
- design, code, test, and document programs so they're easy to read and maintain...even though they'll need less maintenance
- make your final documentation work as painless as possible

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At any rate, Steve did the system by himself, from start to finish, in a year. That averages out to more than 450 lines of tested COBOL code *per day.*

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Congressman: U.S. shouldn't plan tech development

But should foster high-tech innovations

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — The U.S. government should not get involved in planning technological development, but it should make things easier for private enterprise to develop new innovations, according to U.S. Rep. Ed Zschau (R-Calif.).

Speaking here at Infocorp's 1984 Strategic Issues Conference last week before a large group representing a wide segment of the information processing industry, the first-term congressman said heightened government interest in the development of high technology "is a mixed blessing."

While many good ideas have been suggested in Congress, "a lot of bum ideas get suggested, and some of them will pass."

Formerly a professor at the Stanford Graduate School of Business before starting his own company, System Industries, in 1968, Zschau said there is a role for government to play in fostering innovations. But proposals to establish a national planning council to target tax dollars toward identified opportunities are "naive," he said.

Equally misguided, in Zschau's view, are suggestions "to put all the dollars into sunrise industries and forget about all those smokestack industries." While high tech will create millions of jobs, the number "is still relatively small" in comparison to the number of people employed in more traditional industries, he explained.

Don't ignore older industries

Older industries should not be ignored, and efforts should be made to apply the new technologies to make the others more efficient, Zschau suggested. Government should become involved in those new industries, he said, but not by targeting which new technologies should be fostered.

"What we should be doing, in my opinion, is targeting the process by which those innovations are created," he said.

Government's role should be to make sure a climate for innovation exists by implementing four prerequisites that would allow companies to develop new innovations, Zschau said. These prerequisites include:

■ A commitment to broad research, not just in the area of military applications. One method, he said, is to amend antitrust laws to permit corporations to pool "scarce" resources for R&D. "I think by the end of the year we will have changes that permit consortia . . . to enable us to compete in foreign countries with consortia that have long been encouraged."

■ Incentives for industry to take risks on new ideas. Zschau noted that reductions in the federal capital gains tax have dramatically increased the availability of venture capital. He recommended expanding R&D tax credits to cover software and to implement "intellectual property protection" so companies do not fear their investment in new ideas will result in others reaping the profits.

■ The encouragement of an adequate supply of trained technical personnel. "Japan, a country half our size [in population], turns out more engineers a year than we do. Now, we've got the Japanese beat when it comes to lawyers and accountants." Educational institutions need financial assistance to obtain enough faculty and equipment; "the private sector can help . . . but government can give a nudge here, too."

■ The development of market opportunities. The government, Zschau said, must knock down foreign trade barriers and also ensure that U.S. export controls "are designed in a way so we can control, but we can also export."

There must also be a robust domestic market, Zschau said, adding that he thinks the increasing federal deficits must be brought under control to ensure the current recovery does not run out of steam. He said the issues of raising taxes and cutting spending must be depoliticized.

Zschau concluded that it is not the government's responsibility to maintain technological leadership in world markets. "It is your responsibility," he told the audience of industry representatives.

BOWL from page 1

However, Washington gives up too many yards per pass attempt, a critical weakness in the forecaster's estimation.

"The Raiders are strong against both the running and passing games," he pointed out. Los Angeles gives up 5.4 yards per pass attempt as opposed to 6.3 for the Redskins. In Goodean statistics, that one-yard differential translates into a three-point edge for Los Angeles.

It all sounds very concise, but as Goode is quick to observe, "There's no way you can beat the line."

Hoard, a betting man, is editor of Computerworld on Communications.

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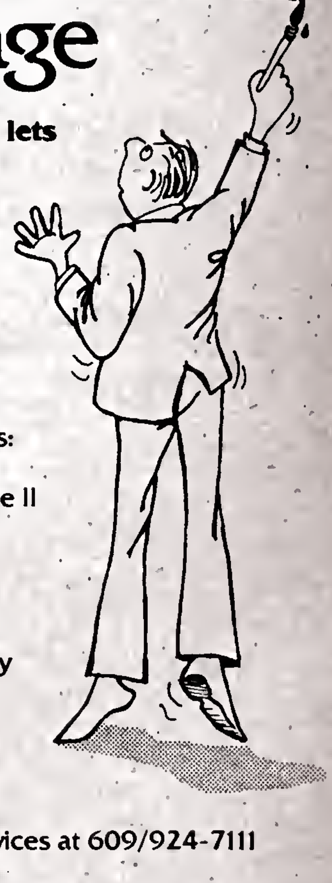

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IBM multiuser micro forecast — without Unix

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — IBM will probably bring out a multiuser microcomputer system sometime early this year, but it won't use the Unix operating system.

That was the prediction delivered here last week to a large group of industry representatives attending Infocorp's 1984 Strategic Issues Conference.

Infocorp President Richard J. Matlack predicted IBM will announce a multiuser system sometime during the beginning or middle of the year. "IBM is going to bring out an [Intel Corp.] 8086 multiuser system," he forecast. "It will be a proprietary operating system, a superset of [Microsoft, Inc.'s] MS-DOS."

Unix is a great operating system for some uses, but not for commercial data processing, Matlack said. But it is notable that Unix was developed by AT&T, which could be IBM's biggest competitor if it comes out with an expansive line of computer products, as many expect.

IBM may announce the anticipated multiuser micro earlier than the company would like in order to meet those competitive pressures, according to Ralph A. Gilman, senior vice-president of Infocorp and head of the company's Microsystem Analysis Group. "If I were IBM, I'd probably want to wait another year; but competitively, their hand might be forced," Gilman said.

Companies that have entered the multiuser battle scene experienced a disappointing year in 1983, according to Infocorp. "Clearly there is no leader in this market," Gilman said. "It's ripe for a leader to step in — IBM, AT&T."

According to Infocorp, a lot of potential multiuser system buyers settled for microcomputers that could be linked together.

There is a lack of software standards and a lot of confusion among buyers, according to Gilman. "The market really hasn't given us an indication where they are going to turn. Maybe IBM will."

Functionality needed

The criteria for spurring the market, in Gilman's view, is "a data base/file server functionality." Users "want to attach dumb terminals to the system, but also to attach personal computers in a network."

The problem has been that "nobody really wants to take the lead in developing software to make this happen. Nobody wants to spend the money," Gilman said. "It might be an opportunity for some of the mini vendors who have the software to step in."

A number of strategic problems face micro vendors, Gilman said.

One is the entry fee for bringing a new product into the market. The cost of doing that will again escalate this year, he said, costing from $50 million to $100 million. Driving those costs are running hot lines to answer users' questions, waging "warranty wars" to bolster confidence in products, operating product centers, providing training and service and purchasing national advertising that can run $20 million and up.

Another factor is the lack of shelf space. Computer stores presently have about 8,000 shelf slots to exhibit micros, but only 2,000 of those spaces are available to new products.

"A lot of people are taking a second look at direct sales, particularly for multiuser systems," Gilman said.

There is a similar lack of access to big business decision makers, he added. "The big market, the Fortune 1,000 corporate manager, more and more is going to the internal information center and trying things out. It's a nonthreatening type of environment — they're not looking over his shoulder."

Hotel fire prompts regulations

BOSTON — Four days after an electrical fire shut down both the regular and emergency power systems at the Westin Hotel here, a state panel passed regulations requiring isolated, fire-resistant emergency electrical and communications systems in new high-rise buildings.

The Mass. Board of Fire Prevention passed the emergency regulation, which could become permanent after a Feb. 3 public hearing. A Boston electrical inspector suggested the rule after the Jan. 2 fire disrupted the 37-story Westin's emergency power and communications network. That outage left most of the hotel unlit and without a public address system as 120 guests and several hundred employees fled through smoke; 65 people were injured.

Although the Westin fire knocked out most power, the data processing department, equipped with a dedicated emergency power supply, lost electricity for just minutes [CW, Jan. 9].

The new regulation requires new buildings over 70 feet tall to isolate emergency cables from the primary cables by placing the emergency system in a separate shaft. That shaft and the cable coverings must be able to withstand fire for four hours.

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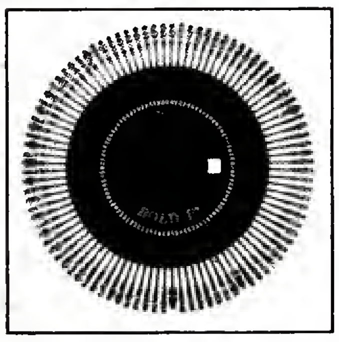

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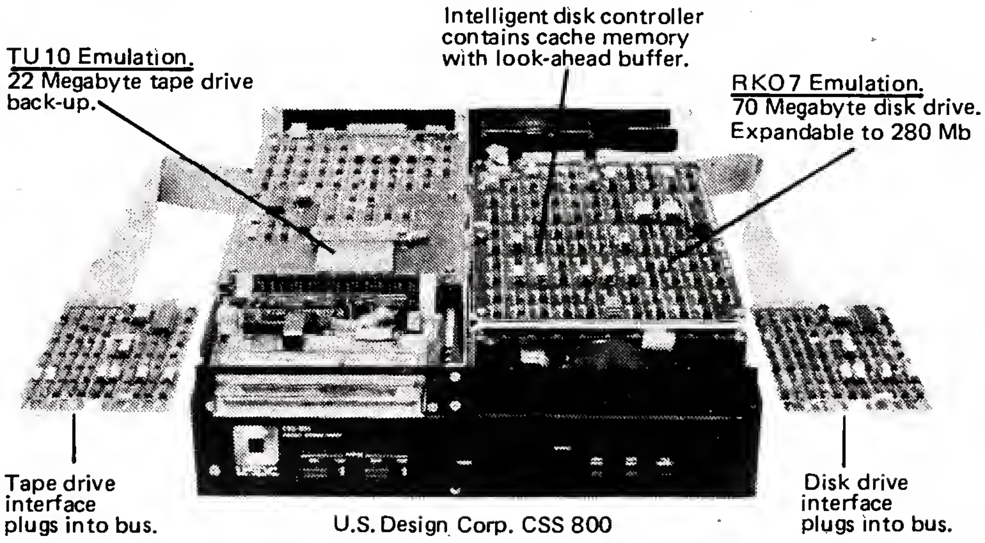
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Atari founder heralds the unorthodox for innovation

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — "If you really want your people to innovate, buy a science fiction book, take the cover off and tell them it's history," Atari, Inc. founder Nolan K. Bushnell declared here last week during a conference for information industry representatives.

Delivering the keynote address at Infocorp's 1984 Strategic Issues Conference, Bushnell praised the unorthodox and sparked much laughter from an audience of more than 200 people representing vendors, various entities in the product distribution chain, representatives of large end-user organizations and others.

Claiming, partly tongue in cheek, that innovation is another word for concealing sources, Bushnell said, "The future is not totally dependent on innovation. Most of the ideas are out there. Just read science fiction; most of the things they write about are going to come true."

Now chairman of Catalyst Technologies, a venture group that has "figured out a way to mass-produce small companies," Bushnell praised the potential for innovation among individuals and urged the participants to foster individual experimentation.

"To throw megateams [of people] at projects is the most oft-repeated mistake of American big business," he charged. Also, he said, "It's not axiomatic that a person who can see the future is necessarily articulate enough to explain his vision to you."

Bushnell developed the Chuck E. Cheese's Pizza Time Theatre concept, which features robotized animal characters and which, he said, may develop into robotic delivery of pizzas by the end of the year. He expressed his feelings on robotics to illuminate his views on innovations.

Robots will 'do windows'

Many believe robots will eventually be a standard feature in homes, "yet, the amount of cynicism and skepticism is overwhelming." He continued, "Then the questions is, what will [robots] do? They do windows."

Bushnell noted that Americans in 1982 spent $8.2 billion on pet food alone and that there is potential for robotics to capture at least some of those dollars. "Fido . . . [is] basically an entertainment device. . . . It's easy to have them detect smoke and fire and take appropriate action."

The point, he said, is that technological innovators "must be willing to enter a novelty. There's nothing immoral, fattening or bad for you [in that]; not everything has to have utility."

In the microcomputer area presently, he declared, there is little that is innovative and much that is merely further development, such as the Personal Computer-compatibles of the "commodity" that is the IBM Personal Computer. "Real innovation comes when you take marketplaces that have not previously existed and do something. Having a product that didn't exist means people aren't used to it, which means you might not have [an identifiable] use for it."

The information revolution has created the need for development of high-tech innovations in the leisure industry, as machines take over the roles of people, he said. He suggested that innovators should look to those areas: "Being willing to go after fun can be a really nice way of finding places to enter."

In addition to encouraging businesses to allow very small groups — one to three people — to work on projects, Bushnell also said he believes in setting time constraints and setting goals. "My theory is that 25% of the technological [gross national product] of the U.S. is created 24 hours before a trade show," he said. "The U.S. has more innovations than the Soviet bloc because of trade shows."

In a more serious vein, he declared that "the business of innovation is one of a philosophy of belief in the individual."

Report details mini purchases

CHERRY HILL, N.J. — Management Information Corp. (MIC) has published "How Small Businesses Use Computers," a report that describes minicomputer purchasing processes completed by 26 companies in various businesses, such as a nursing home, a furniture manufacturer and a trucking company.

MIC interviewed company officials responsible for recent minicomputer purchases. The report includes systems selected, purchasing criteria, financial considerations and system implementation, the publisher said.

The 87-page report is priced at $11. More information is available from MIC, 140 Barclay Center, Cherry Hill, N.J. 08034.

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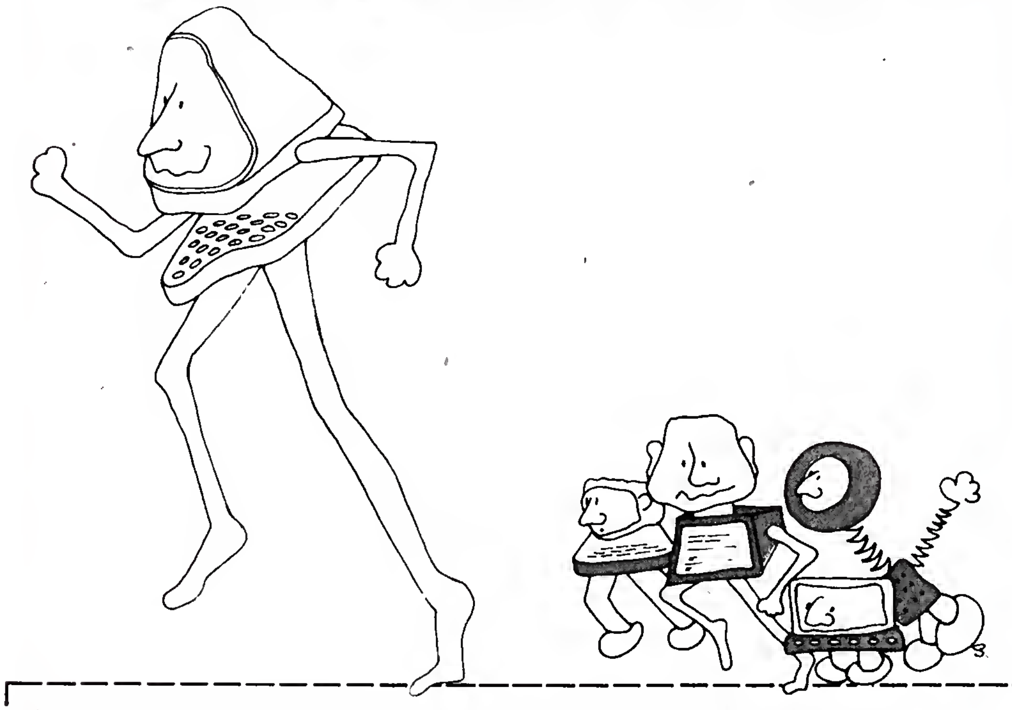

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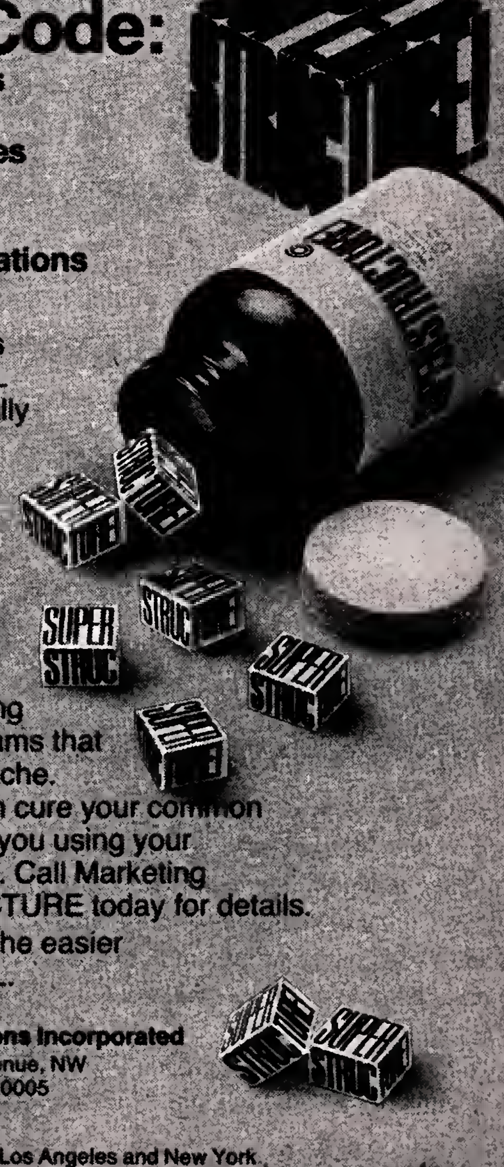

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There's life after IBM: market researcher

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — Not only is there life under IBM for other computer vendors, there may even be life after IBM, according to a market research firm that hosted a conference here last week for industry representatives.

Richard J. Matlack, president of Infocorp and host of the company's 1984 Strategic Issues Conference, looked far beyond the five-year analyses promised to representatives of many industry segments. He warned participants that rapid innovations in the information processing industry would eliminate their present functions and inspire vast structural dislocations before the end of the century.

"I think companies like IBM that have been around for a long time will either voluntarily or involuntarily break themselves up into new relationships," Matlack predicted.

As the industry progresses from information processing to knowledge information processing, "the old rules" of doing business will no longer apply: "If machines can design hardware better than hardware designers, why do we need hardware designers? If machines can program better than programmers, why do we need programmers?"

While admittedly "crystal-balling," Matlack repeatedly said he believes the next stage of computer technology has already arrived. The industry has already started the shift from Mips — millions of instructions per second — to Lips — logical inferences per second, he said.

Companies like Digital Equipment Corp. and General Electric Co. have designed expert systems that "do better jobs than the individuals training them to do those jobs," he added.

Matlack warned industry players to look ahead and look beyond the obvious. "We're kind of like dinosaurs tiptoeing around the tarpits. I'm afraid we're going to fall in." The reason for that fear is that the present state of technology has made available "too much information, but not much knowledge."

The delivery of knowledge to end users will be what drives the industry through the next 25 years, Matlack claimed. But the cost of bringing new products into the market has in the past year or two already become much more expensive, he said during a review of Infocorp's current five-year projections.

"Today, to get into the micro business, it takes $30 million to $50 million," Matlack said.

Microcomputers are where the action is now and in the next few years, according to Infocorp's projections. "By 1988, this new industry, which is only seven years old, will actually generate the majority [dollar-value share] of systems shipped," according to Matlack.

While IBM presently dominates, other big players such as ITT and AT&T will carve up the market so that no one company can overwhelmingly dominate, Matlack said.

Opportunities presently exist for companies that can bring practical uses to the consumer computer market, he added.

According to Infocorp Vice-President Ralp A. Gilman, "By 1988, over two-thirds of [microcomputer] units sold will be priced under $1,000." In dollar terms, he added, by 1988, micros in the $1,000 to $6,000 price range will represent half of all micro shipments.

Large computer systems, priced over $350,000, won't disappear, according to Matlack, and in fact should experience rapid technological development. "Eventually, large systems are going to link all your micro systems," he said.

"They are not going to go away, they just won't be as dominant as they once were," he added.

Small systems, priced from $25,000 to $350,000, have seen the market slow considerably, but there are still opportunities for innovative companies such as those presently selling fault-tolerance, computer-aided design and manufacturing and transaction processing, Matlack said.

Common conference set for April

CINCINNATI — Common, the organization of users of IBM equipment ranging from the Personal Computer to the 4300 series processors, plans to hold its spring '84 conference at the Convention and Exposition Center here April 1-5.

The conference will feature 200 seminars covering such topics as management, hardware and applications.

Among the scheduled seminars are "Performance Appraisal," "Dealing with Problem Employees," "Office Politics," "Job Stress and Burnout" and "How to Introduce New Technology Into Your Firm."

The conference costs $100 for members who prepay, $130 for members who register the first day of the conference, $160 to nonmembers who pay before the conference and $180 for nonmembers registering on the first day.

Information can be obtained through Administrative Director, Common, Suite 1717, 435 N. Michigan Ave., Chicago, Ill. 60611.

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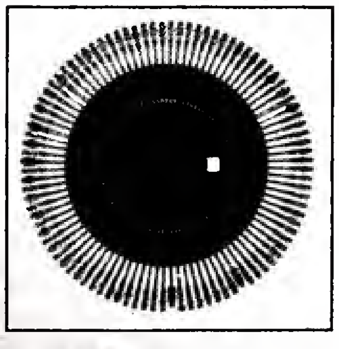

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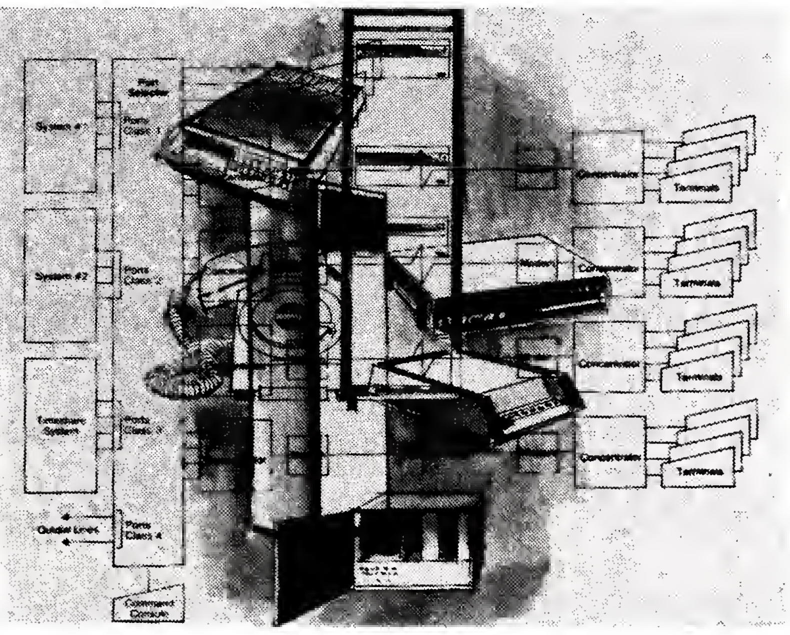

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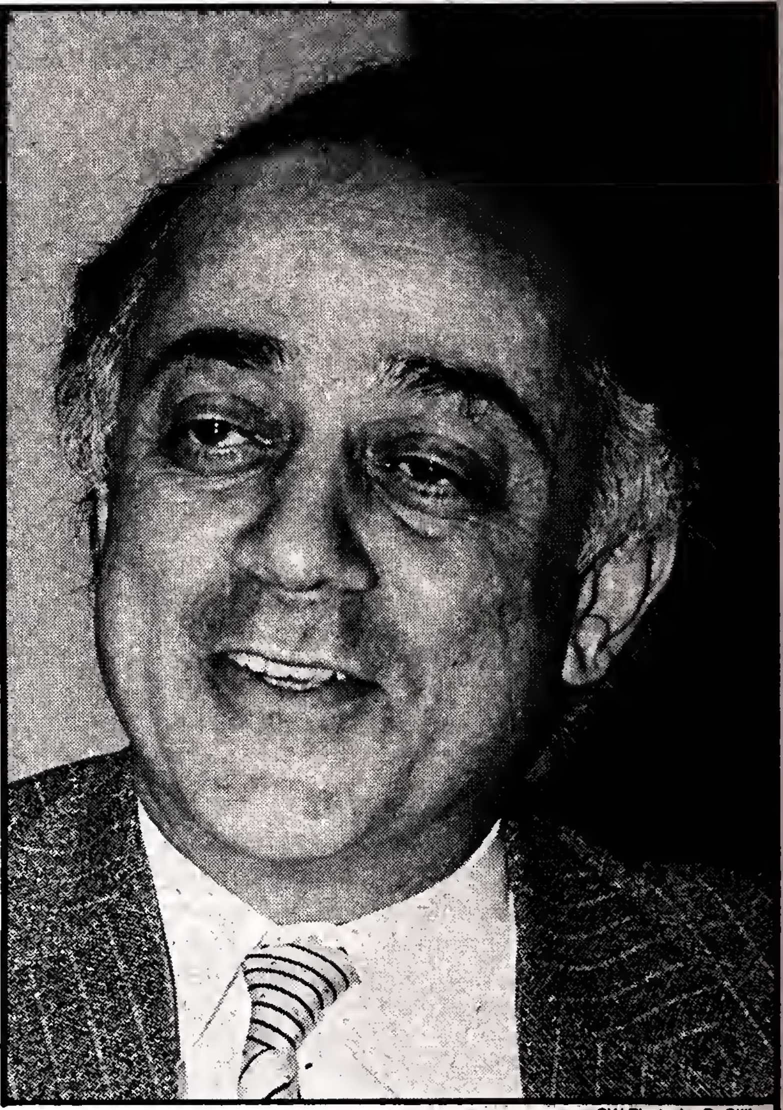
Ada's year of reckoning

Insights offered by its chief designer

Nineteen eighty-four should be the year of reckoning for the Ada programming language. The U.S. Department of Defense (DOD), which commissioned Ada in 1974 in an effort to standardize its development work, has directed that all major DOD projects begun after January 1, 1984, must be programmed in Ada.

The language has been the subject of much scrutiny and debate in the data processing community, which may eventually have to deal with the issue of scrapping millions of programs to conform to a government-imposed language standard. Ada detractors say the language is complex, difficult to learn and largely untested. Supporters say Ada's portability and technical elegance will more than make up for the inconvenience of converting existing software.

Jean Ichbiah, president of Alsys, S.A. of France and chairman of the board of Alsys, Inc. in the U.S., was the chief designer of Ada while at CII-Honeywell Bull in France. His new company markets Ada compilers in Europe and is preparing to enter the U.S. market with microprocessor-based Ada compilers later this year. Ichbiah was recently interviewed at Alsys's offices in Waltham, Mass., by Computerworld *Senior Editor/Software Paul Gillin.*



CW Photo by P. Gillin

Ichblah

According to the Department of Defense (DOD), all mission-critical applications should now be developed in Ada. Is that actually the case?

We have no reason to believe the contrary. The important thing is that DOD is actually starting to design in Ada. They don't need a compiler to start with, but they need to be sure that they will rendezvous at the correct time with an operating compiler.

They have at least one year available to them before they need an Ada compiler actually operating on these machines, a year and a half before they need a good compiler and probably two years until they need an excellent compiler.

Has there been the level of interest in Ada from the business community that you had expected to see?

I strongly believe that when we come up with the compilers, the language is so much better than anything else that the use of it will spread very fast. So it's no surprise to me at this stage that [the business community is] not crying out for compilers. Once they have them, they will use them.

The approach DOD is taking to promoting the language is beyond my wildest dreams. If you want a point of reference, in 1971 on PL/I, you had about three books available and that was for a language defined in 1964, with the first compiler available in 1968. On Ada you already have 50 to 60 books. It's a milieu of culture that's developing, in which a consensus creates a consensus and so on.

How do you respond to the argument that instead of Ada, we should standardize something we already know, like Cobol?

Languages like Cobol and Fortran are not bad languages, but they were good languages designed for a time when the cost of hardware was exceedingly high. We've come to a different time in which we know that we can ascribe many more tasks to the computer. For example, an Ada compiler is going to do a lot more checking than a Fortran compiler or a Cobol compiler.

We've also come to a culture where we're asking a lot more from computers. We are giving them tasks for which reliability is essential, and, therefore, we give much more value to program reliability. This is not something that we could achieve with previous language technology.

What impact do you think the Ada initiative will have on other DOD language development plans? Is it intended to be a complete language for DOD projects in the foreseeable future, or do you think it will be an evolutionary language?

I think within DOD they will use Ada and try to do other things with packages merged into Ada, rather than through new languages. Ada has a very powerful concept we call a "package."

In the past, if you wanted to do work on matrices, there was no other way than having a special feature called "matrix" in your language. With Ada, if you want to define matrices, you don't have to change the language. You just define a package that you call "matrices," in which you define what is a matrix and what are the operations you want to do.

The beauty of these mechanisms is that they don't require any changes to the compiler.

How important to Ada's success is the issue of portability?

One important thing DOD has done that has given a lot of credibility to the Ada effort is ensure that Ada means the same things to all people using it. In the past, a language was defined, compilers were developed and several years later they started standardizing it, and then years later they thought about a validation facility. That was like shooting first, aiming after and thinking finally.

With Ada they've done the things in the right order. There was the language definition, then they developed the standard for the language, then they developed a validation facility and then finally compilers. It's the first time compilers have appeared that could be validated against a standard.

Another important thing is that they have to revalidate every year to be called Ada. You can't sell an Ada compiler unless it's validated.

How do you avoid a "Tower of Babel" effect created by many vendors implementing their own versions of the language?

Several companies, including our own, are using an approach that will simplify the portability of Ada compilers. We're restructuring our compiler in such a way that we can distinguish two main logical parts.

The part that we call the root is machine independent and represents about 80% of the work that needs to be done. Now, this part translates into an intermediate language. This is taken over by a code generator, and the code generator translates it to object code. It really means that when we are attaching another machine, we only need to do the 20% part that is machine-specific again. We don't need to do the root.

The primary criticisms that are leveled at Ada are that it's too complex and that it contains too many elegant features which are useful only in a limited sense. How do you respond to that criticism?

First of all, you can teach Ada by stages. For instance, if you don't need the real-time feature, you don't have to learn it. The second response is that this kind of complexity is very subjective. The experience we've had is that once people learn Ada, they find it extremely easy to use.

Suppose someone provides you a very small language, which is simple and solves a part of a problem, but leaves you needing other tools to solve the rest of the problem. Have they made your problem simpler? No.

Ada has taken a realistic attitude that our aim is to solve problems, not only one facet of the problem, and if we judge complexity, we should judge the complexity of the complete resolution of the problem.

A third line of response is that much of this complexity accusation has come from a certain part of the academic community. Their claim was based on the document that defined the language. Now let me use an analogy. If you had a theater and you saw the design documents for the theater, they show all the wiring, all the concrete and such. If these documents are not complex, the theater is not going to do its job.

I think the comparison applies well to Ada. We can teach it to professionals in a matter of days. Thereafter, if they use their intuition, they find the correct answers, very much as you don't need to remember the plans of the theater in order to find your seat.

What will it take in the end to convince the skeptics that Ada is here for the long term?

When our compilers are available on the [Intel Corp.] 8086 and the [Motorola, Inc.] 68000 [microprocessors], then people will be pressed to make a choice. If they have to do the applications, I don't see why they would do it in Pascal or C rather than in Ada.

The reason we're not expending any effort trying to convince skeptics is that they have the right to be skeptics until they get a compiler in hand. When they have a compiler that runs, the situation will be quite different.

French user gives ADE credit for new business

1ST USER

By Susan Blakeney
CW Staff

ORLY, France — The first commercial European user of the Data General Corp./Rolm Corp. Ada Development Environment (ADE) says it has won a string of new accounts since it implemented the system last fall.

ADE is comprised of Rolm's Ada software and DG's family of Eclipse superminis. The multiuser Ada Work Center systems are intended for developing, testing and debugging Ada applications [CW, May 9].

ADE's first European user is Informatique Internationale, which specializes in applications development for aerospace projects, nuclear energy and oil exploration. Informatique Internationale is a subsidiary of the major French software and systems house Groupe Cisi.

Informatique Internationale's president, Guy Canevet, said ADE has been critical to getting new business in the space and research industries, including contracts with the French Space Agency, the European Space Research and Technology Center, Aerospace and Electronic Serge Dassault and the French Institute of Statistics. "These accounts would not have been possible without the new product," Canevet maintained. "For example, the computer center at the National Scientific Research Center at the University of Montpellier [in Montpellier, France] can connect terminals directly to our computer to run Ada development programs. We have contracts from other customers who simply want experience with Ada."

The DG/Rolm Ada compiler was the first commercial compiler to be validated by the U.S. Department of Defense's (DOD) Ada Joint Project Office in June 1983. Ada, the standard programming language trademarked by DOD, is expected to become the single most common computer language for all branches of the American military by 1985.

The general response to ADE at Informatique Internationale has been very positive, according to Canevet. "We have been able to make tools for developing other software with it . . . We have created a version of a testing language [Atlas] that allows hardware testing. We're quite pleased and hope our success will continue."

Similar in structure to Pascal, Ada is considered particularly well suited for real-time applications requiring concurrent processing. As demonstrated by Informatique Internationale, the characteristics of Ada are also beneficial in commercial, industrial and scientific applications.

Canevet first heard of the ADE product at a seminar early in 1983 and contacted Rolm shortly thereafter. Until then, Informatique Internationale had used a system it had developed itself. "It was a top-down methodology using a series of graphs. But then for a more detailed analysis, we had to use something else . . . We had developed an extended version of Fortran with real-time capabilities," Canevet recalled. "The whole process took too much time . . . We needed more sophisticated software engineering tools."

The decision to go with ADE was made in June. Even though comparative shopping was not possible, Canevet said the combination of Ada with a high-quality development environment was very attractive.

"We would have liked to make an industrial comparison of products, but there were no other ones available," he lamented. "And as far as I know, it's still the only one out there."

Informatique Internationale sent two staff members to Rolm's Santa Clara, Calif., training center for a week. Upon their return, they trained the rest of the company's applications development team. The software was installed in September at company headquarters here on an eight-user DG Eclipse MV/4000 system configured with DG Dasher terminals.

When asked if the new application development environment has visibly hiked productivity, Canevet said it is too early to tell. "We are now developing one part of a new ground station for a satellite using ADE. We're still experimenting with it."

As proof of its satisfaction, Canevet said, the company is upgrading its DG MV/4000 minicomputer to the DG MV/10000 superminicomputer in March. "We need more power because of all the new business that's developing," he explained.

Report eyes computer tax breaks

PRAIRIE VILLAGE, Kan. — A report explaining how computer purchasers can take advantage of tax breaks has been compiled by a certified public accountant here.

"Tax Breaks for Computer Buyers," by Vernon Jacobs, is said to outline the benefits of deducting computer purchases on tax returns and of investment tax credits that are available.

The 26-page report is available for $9, according to the publisher. It can be obtained from Research Press through Box 8137-P, Prairie Village, Kan. 66208.

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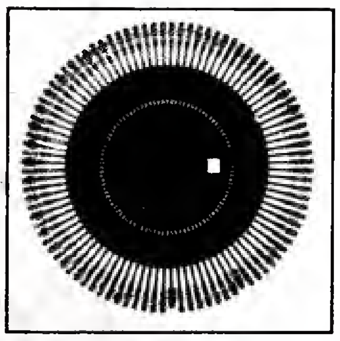

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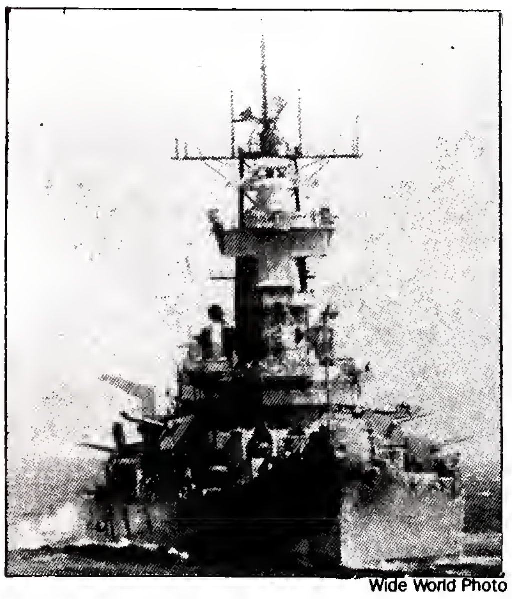
Battleship happy to stay analog

Gunfire system predates digital computers



Wide World Photo

The *USS New Jersey* joined American ships last month in the shelling of Syrian positions east of Beirut.

By Peter Bartolik
CW Staff

This may be the era of *Star Wars* computerized warfare, but when the recommissioned battleship *USS New Jersey* fired its massive 16-in. guns during naval bombardment operations off the coast of Lebanon last month, the devastating shells were directed by electromechanical systems that predate the first stored-memory computers.

According to a spokesman for the U.S. Navy, the gunfire support system aboard the *New Jersey* — the only active battleship and the largest active warship in service throughout the world — is a World War II-era analog system.

Although the *New Jersey* was twice taken out of mothballs for service "on the line" during the Korean and Vietnamese conflicts, and again recommissioned just over one year ago, the gunfire support system remains the same as installed for the original commissioning in May 1943, according to Lt. Dennis Sawyer of the Navy's information office.

The battleship was recommissioned by President Reagan on Dec. 28, 1982. During the legislative battle to fund the $326 million renovation project, supporters termed the vessel invincible because of armor protection up to 18 inches thick and its massive firepower. Critics termed it a dinosaur and said its 1,500 enlisted men and 60 officers would be sitting ducks in today's high-technology warfare.

Shells create craters

The shells fired in December against positions reportedly held by Druse Muslim fighters each carried 1,900 pounds of explosives that reportedly can create craters 50 yards across and 20 feet deep.

The *New Jersey* is one of four "Iowa-class" battleships built for World War II service. The *USS Iowa* is itself currently undergoing refurbishing and is scheduled for recommissioning on April 30, after which it will relieve the *New Jersey* in the Mediterranean.

According to John Reilly, a civilian historian with the Naval Historical Center in Washington, D.C., the components of the *New Jersey*'s gunfire control system are still state of the art, even though they were developed prior to World War II. "No new system has been developed for heavy weapons," he said. "There has been no occasion to develop a new system. What they have on board works."

With the Iowa-class ships out of service as much as in service over the past four decades, he surmised, there has been no pressing need to spend millions to develop a modern computer system.

At the heart of the system controlling the nine 16-in. guns is a Mark 8 range keeper, an electromechanical device that receives input from various sensors on target range and direction, along with the *New Jersey*'s own motion, direction, speed and even wind speed.

Keeps guns on target

The range keeper keeps the guns pointed on target during movement by both the ship and target. The system was adapted from the Mark 34 system in use during the 1930s, Reilly said.

Another range-finder system, the Mark 1, directs the *New Jersey*'s battery of 12 five-in. guns, which were also fired last month. The Mark 1, also developed during World War II, was the first system termed a computer by the Navy, according to Reilly.

There has been some modernization, Lt. Sawyer noted. In the latest recommissioning, 20 eight-in. guns were removed to make way for cruise missiles. The long-range Tomahawk is designed for antishipping attacks of 200-plus miles and land attacks in excess of 1,350 miles and is controlled by General Dynamics Corp.'s Tomahawk Control System and onboard Terrain Contour Matching microprocessors.

The short-range harpoon is designed for ship-to-ship operations up to 60 miles and is controlled by the AN/SWG-1 control system built by McDonnell-Douglas Corp. and Sperry Corp.

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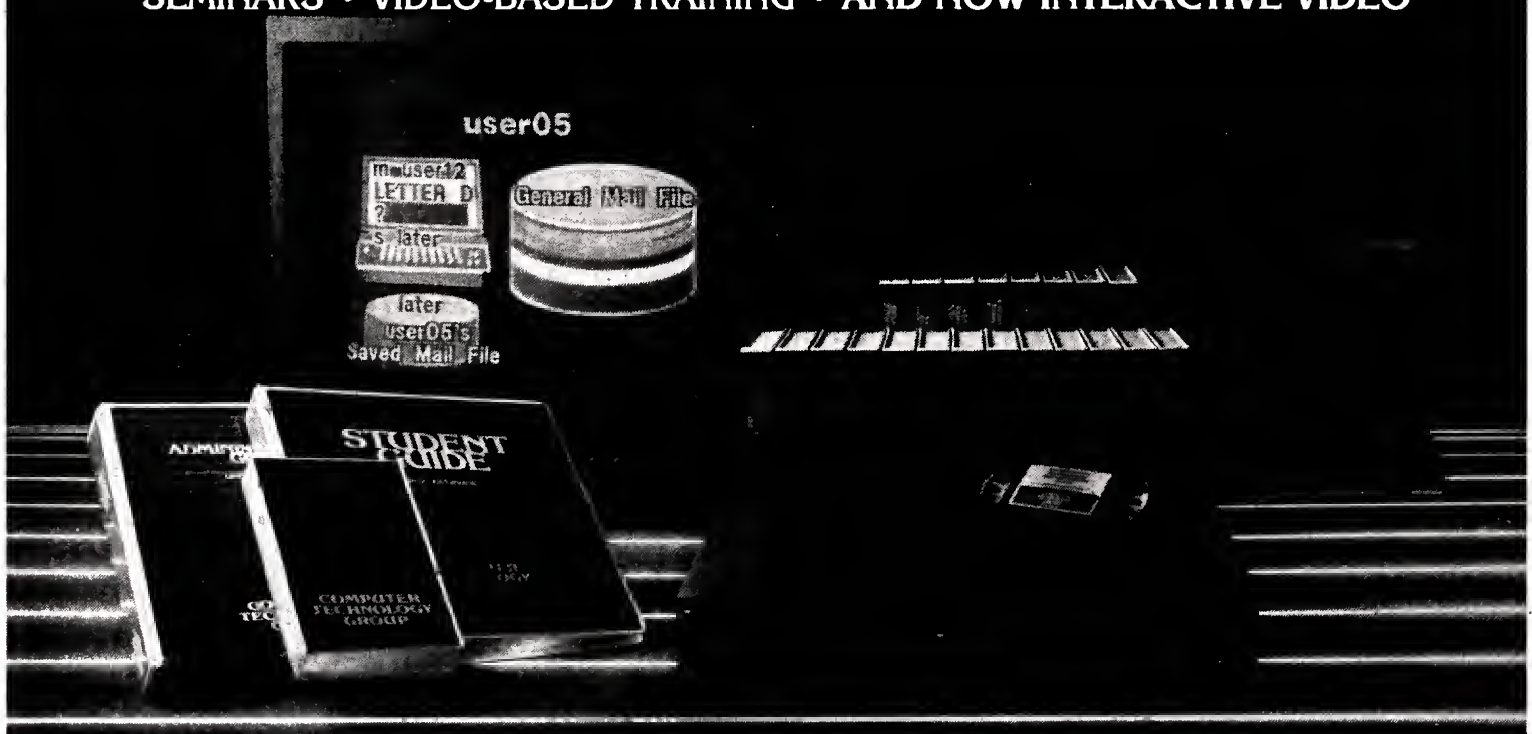

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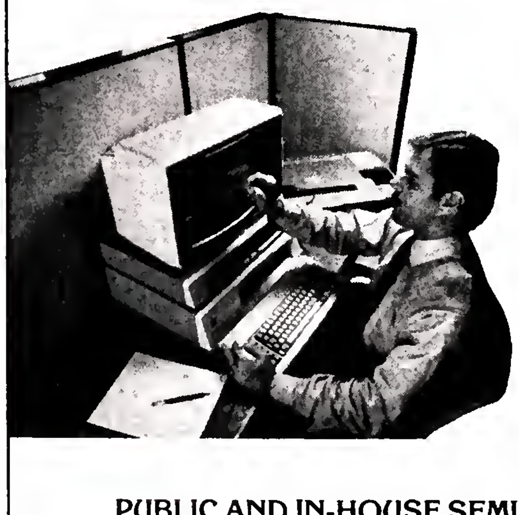

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Custom software sales tax meets its match

Specter of personal ruin fuels one-man crusade

By Bill Laberis
CW Staff

MIAMI — When state revenue agents in 1976 told Bob Sherin that he owed $45,000 in unpaid sales taxes, about the only thing he was certain of was that he could not afford to pay.

What he did not know was that the revenuers' visit would nearly ruin his computer service business, strain his marriage to the breaking point and launch him on a crusade that today has made him a driving force behind abolishing state sales taxes on custom software.

Sherin

Sherin's cause has taken him to courtrooms, administrative chambers and statehouse rostrums across the country. There his single-minded dedication, fueled by a trauma that he said almost blotted out his professional and personal life, has been a key factor in several successful attempts to exempt custom software from state sales tax provisions.

"It's almost a religion with him; he'll go anywhere and do just about anything to press his fight," said one software industry executive familiar with Sherin's antitax campaign of the past seven years. "A lot of people disagree with the position he has taken over the years, myself included, but you'd have to say on the other hand that a lot of people are indebted to him, too."

Sherin has been retained as a special witness and nonjudicial adviser in sales tax cases by professional organizations such as the Data Processing Managers Association and the Association of Data Processing Service Organizations, Inc. He has at times bucked the legal establishment in advocating that sales tax rules be fought not in court but at administrative hearings, where the tax code itself is contested, not simply its application in individual cases.

If taking on the government hasn't been enough, Sherin has also butted heads with Data General Corp. In 1973, DG demanded that Sherin cease using the term Nova in his company name, then Nova Computing Services, Inc., because DG had labeled its minicomputer line with the same name. But Sherin fought back, claiming his use of the word predated DG's, and threatened to take DG to court to prove his point. DG backed off, paying Sherin for exclusive rights to the Nova trademark.

> *"Sherin's cause has taken him to courtrooms, administrative chambers and statehouse rostrums . . . his single-minded dedication . . . has been a key factor in several successful attempts to exempt custom software from state sales tax provisions."*

But it is his obsession with obliterating software sales taxes that has dominated Sherin's life since 1976. "My struggle has given me a sense of personal fulfillment, which is what I needed to compensate myself for what I had needlessly suffered," Sherin said in a recent interview. "It's the most important thing in my life."

Sherin's odyssey began in early 1976 shortly after Florida revenue officials examined the books of Nova Computing and presented him with a bill for $45,000 in back taxes, interest and penalties. The state's actions seemed entirely proper, given a segment of the state tax code that extended the sales tax to punched data processing cards and coded magnetic tapes, labeling them "tangible . . . and, therefore, taxable property."

Word of Sherin's assessment spread. A local bank demanded back half a $50,000 loan made to Sherin for hardware he'd purchased. To make good on the demand note, Sherin chewed into his business' operating capital and even refinanced his home. The strains on his business and credit rating began to creep into his marriage. Eventually his wife left him.

Determined to fight the law, Sherin found little hope in the legal community, where lawyers informed him that the law was clear. So he turned what remained of his business over to associates and immersed himself in law books for the next year, spending each day in a local law library poring over case studies relating to taxation. At one point he studied at night by candlelight when, because he was unable to pay his bills, his electricity was shut off.

He persuaded both the *Miami Herald* and the Florida Light and Power Co. to pay for some legal research into the matter and raised further funding with appeals to his customers for aid. But Sherin was to argue the case himself, and his day in court arrived in November 1976.

Sherin's attack went to the heart of the tax code, questioning the propriety of labeling a programmer's work as tangible while calling that of an accountant or lawyer intangible. The climax of the case came when he subpoenaed the state's director of systems and programming and, over the objections of state attorneys, got the director to state his opinion that software is a personal, and therefore intangible, service.

Sherin prevailed; the administrative examiner who heard the case issued a directive that the tax rule applying to software was invalid. The state did not appeal.

His victory drew the attention and praise of industry groups, who began drawing upon his expertise to join the sales tax fight in several states, including Rhode Island, Ohio, Massachusetts, Michigan and Wisconsin. He also began writing voluminously on the subject for industry association journals and trade publications.

Today, Sherin said he is continuing his antitax crusade, having an admittedly easier time building upon his past accomplishments than going it alone. He was involved in the recently concluded action in Michigan, where the high court upheld a ruling against the state tax department, differentiating between custom and canned software in the application of sales taxes [CW, Sept. 26].

"It's fun for me now. . . . I found you really can become quite an expert on a narrow issue," Sherin said. "I feel I've been fighting for basic rights, improper taxation and the like. It's an honor to have been involved."

State Sales Tax Regulations and De Facto Rules

STATE	SALES TAX RULE
Alaska	All software exempt
Ariz.	Most custom* software exempt, off-the-shelf packages taxed
Ark.	All software taxable
Calif.	Custom programs and modifications exempt, prewritten programs taxed
Colo.	Exempts all programs except computer games
Conn.	All software taxable, including custom program transactions
D.C.	All software "apparently" exempt from taxation
Fla.	Exempts all software except that available in computer stores
Ga.	All software taxable
Hawaii	All software taxable
Idaho	All software taxable
Ill.	Exempts all software except that available in computer stores
Ind.	Exempts all software except that available in computer stores
Iowa	Some custom mainframe software exempt, all other taxable
Kan.	All software taxable
Ky.	All software taxable
La.	Exempts all software
Maine	Exempts custom software, taxes all prewritten packages
Md.	Prewritten programs taxed, some custom software exempt
Mass.	All software taxable
Mich.	Custom and modified prewritten software exempt, all else taxable
Minn.	Unmodified, prewritten programs taxed, rule on remainder unclear
Miss.	Custom software exempt, prewritten taxed
Mo.	Custom software exempt, prewritten taxed
Neb.	Unclear, but apparently attempting to exempt all except game software
N.J.	Most mainframe software exempt, game software taxed
N.M.	Vague statute
N.Y.	Most mainframe programs exempt; game, some prewritten software taxed
N.C.	Modified custom programs exempt, unmodified prewritten software taxed
N.D.	All software exempt except games
Ohio	All software taxable
Okla.	Somewhat vague, but some mainframe software apparently exempt
Penn.	All software taxed
R.I.	All software taxed
S.C.	Court ruling pending, but most software taxable at present
S.D.	All software taxable, including services
Tenn.	All software taxed
Texas	"Most liberal state," exempts all including game software
Utah	Custom software exempt, prewritten programs taxable
Vt.	Custom programs exempt, prewritten programs taxable
Va.	Regards essentially all software as taxable
Wash.	Custom programs exempt, prewritten programs taxable
W. Va.	All software taxable
Wisc.	Legislation pending, will probably exempt custom software
Wyo.	All software taxable

* The definition of a custom program varies considerably from state to state in those states with written regulations.

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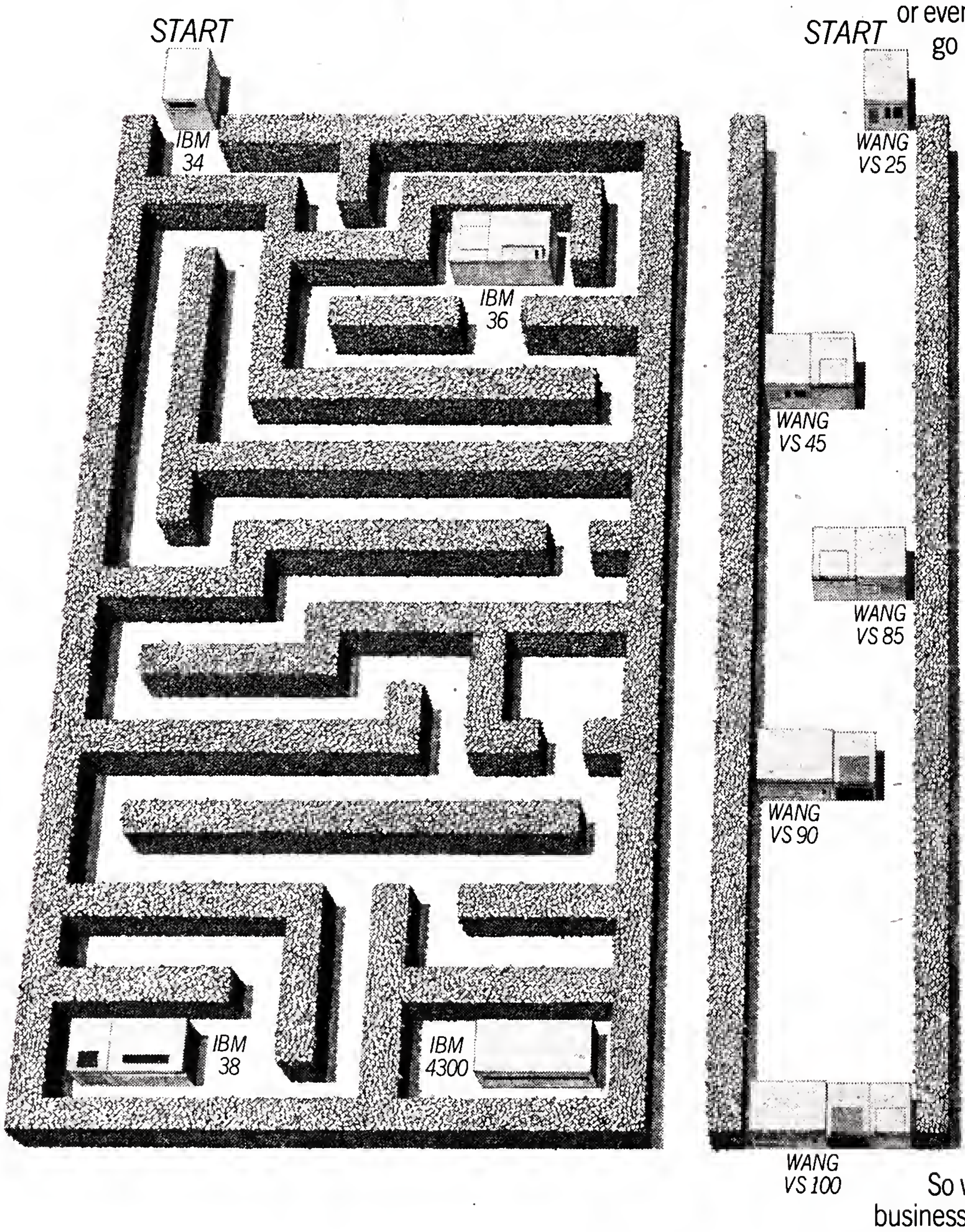

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CW17

Experts say Apple-Franklin issue undecided

Operating system copyrightability still 'on the table'

By David Myers
CW New York Bureau

NEW YORK — Franklin Computer Corp. abandoned its fight with micro rival Apple Computer, Inc. two weeks ago, but the out-of-court settlement left unanswered the question of whether an operating system embedded in read-only memory (ROM) can be protected by copyright, legal experts said last week.

Franklin agreed to pay Apple $2.5 million and to accept the validity of Apple's copyright claims. The Cherry Hill, N.J.-based maker of Apple-compatible micros was given until April 1 to quit copying Apple's operating code [CW, Jan. 9].

"Settlements don't affect the larger legal issues except for those between the parties involved," Daniel T. Brooks, staff attorney for the Computer Law Association, said from Springfield, Va. "The larger legal issues are still lying on the table."

Issues not addressed

The settlement "undercuts the ability of the Supreme Court to address the issues," Brooks lamented. "Somebody else now has to take it to that level."

A Philadelphia Appeals Court had ruled in favor of Apple's copyright claims last fall [CW, Sept. 12, 1983]. In announcing the settlement earlier this month, Franklin President Avram Miller said his company was accepting the appeals court ruling "as law."

But Washington copyright attorney Jon A. Baumgarten, who was retained by Franklin after the appeals court ruling, noted that "all the court said is that an operating system is not per se uncopyrightable." No high-level U.S. court has had the opportunity "to examine any particular operating system," Baumgarten pointed out.

"The current state [of law] is that there are still large issues remaining to be resolved. All that has really been settled is the categorical question: Computer programs are a 'category' [protected by copyright] like books or pieces of music," Baumgarten said.

Apple lawyers disagree

Apple's attorneys disagreed. "The case resolved quite a number of issues," maintained Jeffrey Blatt, a Beverly Hills, Calif., lawyer who represented Apple in the case. "I don't really think there's a question that object code is protected if it sits in ROM."

Blatt said that "it's always nice if the Supreme Court takes the case" to settle the issue for good, but even so "the law is much clearer now than when we started. [Franklin v. Apple] did its job. It has been cited, has already been used as a precedent [in other cases]."

According to the lawyers who spoke to *Computerworld*, the legal issues still to be settled include what Baumgarten called "second-generation questions," such as whether gate arrays or even printed-circuit boards can be shielded by copyright legislation.

Blatt pointed out that circuit boards are covered by copyright laws in Great Britain.

"My feeling is that what an electrical engineer does to design a circuit is not copyrightable. But what a software programmer does is. He's preparing a work of authorship," Brooks said.

Another question left unanswered by the settlement is whether the computers of two manufacturers can ever be "bit-to-bit compatible" without identical operating codes, according to Brooks.

"The larger the number of bit variations, the greater the potential that somebody sometime will discover a program which won't run on both," Brooks said.

Meanwhile, Franklin is preparing an operating system that it says will be able to run any Apple application program. Franklin computers running on the new operating system will hit the market before April 1, Miller promised.

Third-party arbitrator

If Apple believes the new operating system still infringes on its copyright, a third-party arbitrator will settle the dispute. Blatt said the two micro vendors were in the process of choosing the arbitrator.

As for the $2.5 million settlement, which had been called low by some, Brooks said, "That's not bad for a royalty [payment]."

Franklin expects to have sold about 100,000 boxes with the Apple-identical operating system. That works out to about $25 per box in "royalties."

While Blatt would not say if Apple viewed the $2.5 million settlement as a royalty payment for past infringements by Franklin, he nevertheless said it is "typical" for the loser in a copyright case to pay royalties to the winner.

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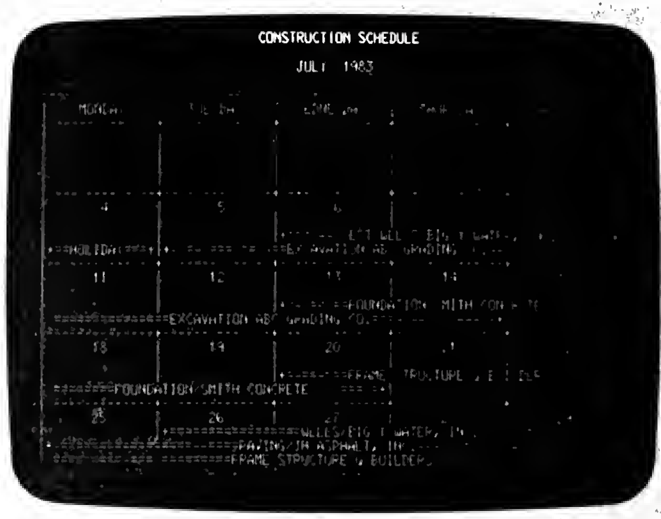

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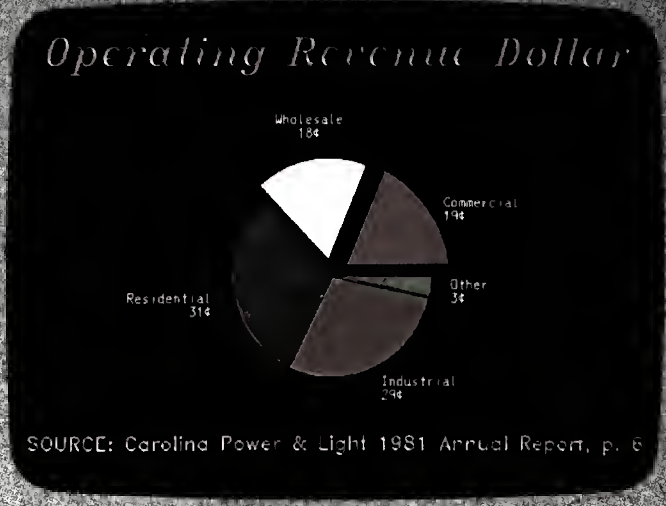

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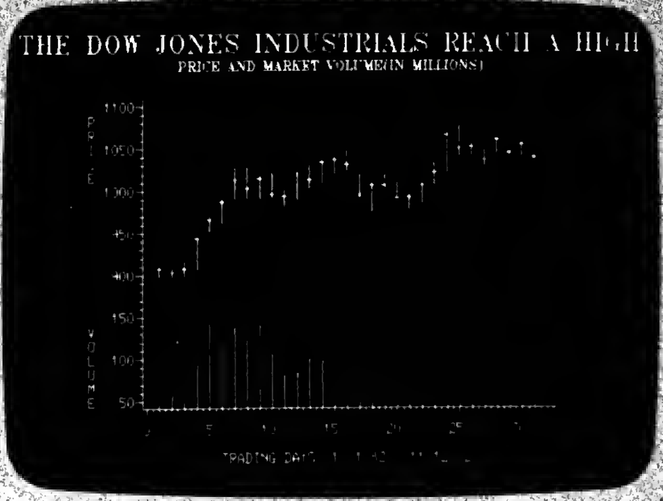

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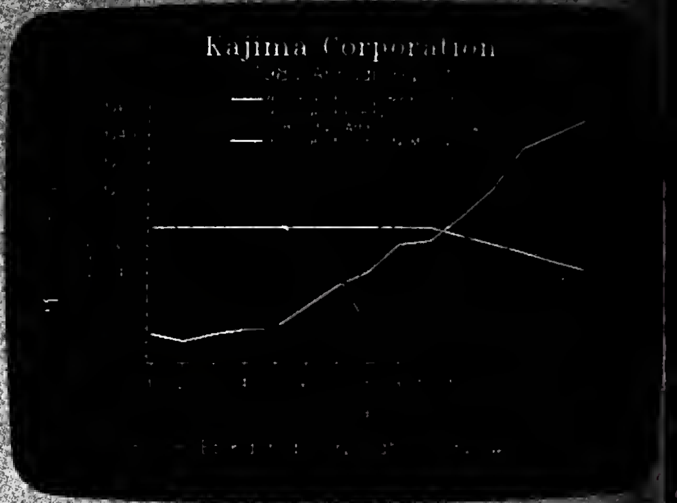

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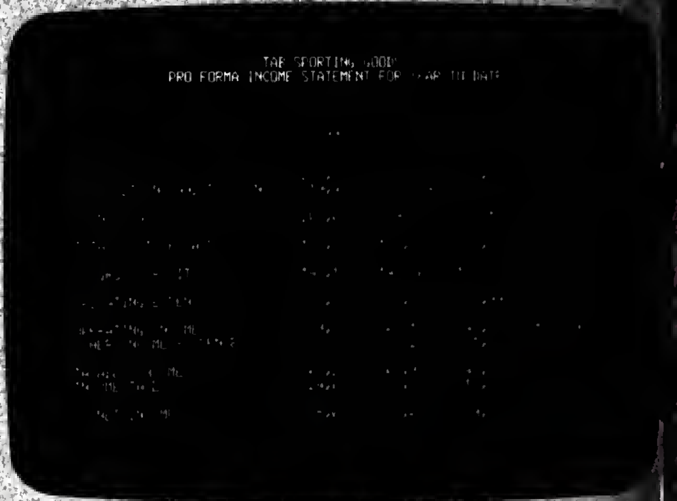
In short, the SAS System gives you the analytical tools for a complete Decision Support System—integrating modeling, statistical manipulation, graphics and multiple data sources.



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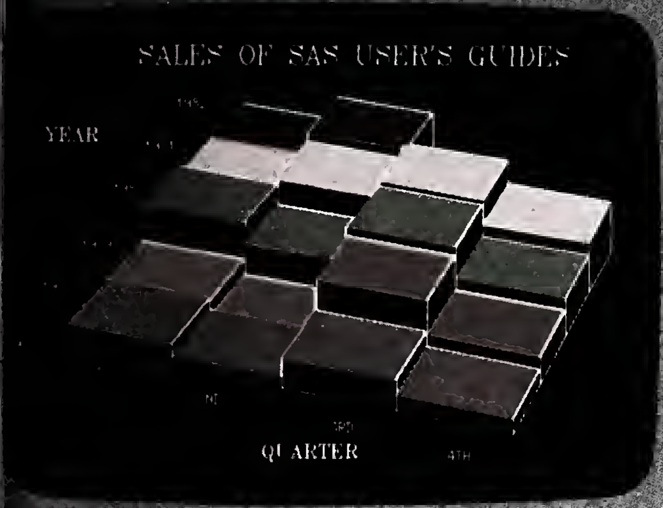

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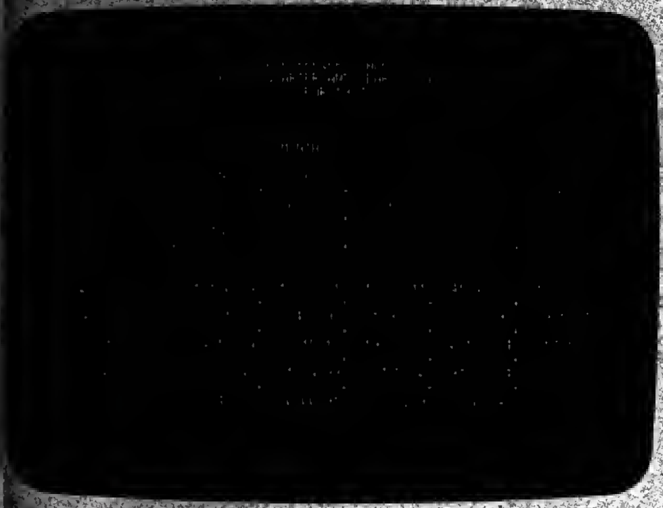

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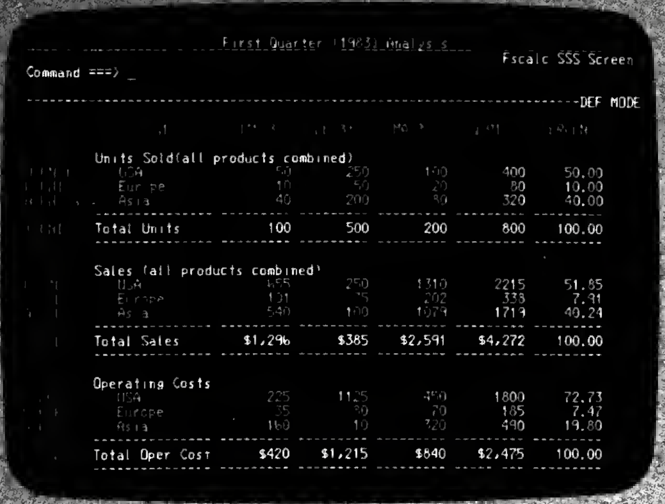

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                    First Quarter (1983) Analysis
                                                        Fscalc SSS Screen
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----------------------------------------------------------------DEF MODE

       Units Sold(all products combined)
          USA                    50      250      100      400     50.00
          Europe                 10       50       20       80     10.00
          Asia                   40      200       80      320     40.00
       -------------------- -------- -------- -------- -------- --------
       Total Units              100      500      200      800    100.00
       -------------------- -------- -------- -------- -------- --------

       Sales (all products combined)
          USA                   655      250     1310     2215     51.85
          Europe                101       75      202      338      7.91
          Asia                  540      100     1079     1719     40.24
       -------------------- -------- -------- -------- -------- --------
       Total Sales           $1,296     $385   $2,591   $4,272    100.00
       -------------------- -------- -------- -------- -------- --------

       Operating Costs
          USA                   225     1125      450     1800     72.73
          Europe                 35       80       70      185      7.47
          Asia                  160       10      320      490     19.80
       -------------------- -------- -------- -------- -------- --------
       Total Oper Cost         $420   $1,215     $840   $2,475    100.00
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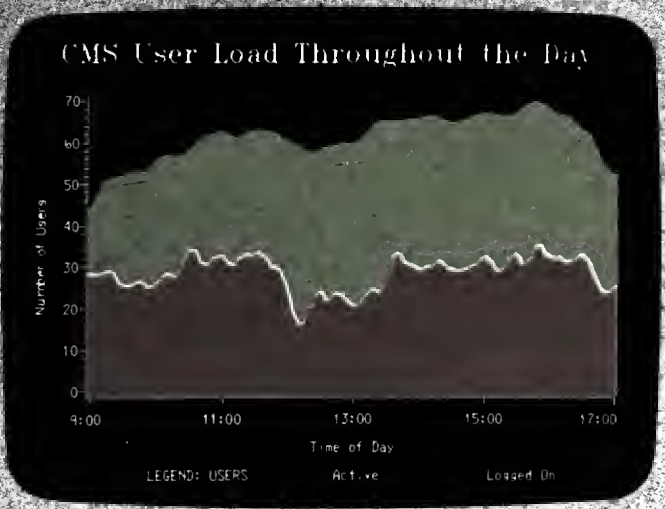
SAS/FSP



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SAS Software Limited, The Centre, 68 High Street, Weybridge, Surrey KT13 8BL, UK. Telephone 0932-55855. Telex 946138.

SAS Institute (NZ) Ltd., Level 9, Greenock House, 39 The Terrace, PO Box 10-109, Wellington, New Zealand. Telephone (04) 727-595. Telex NZ 31525.

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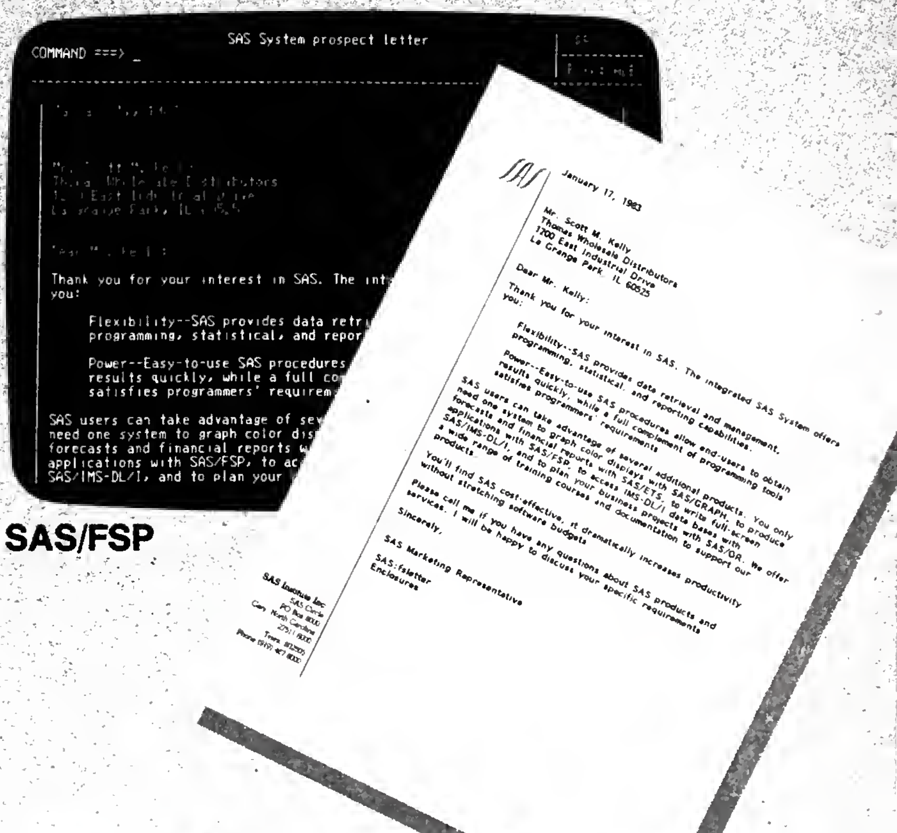

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                    SAS System prospect letter
COMMAND ===> _

  Thank you for your interest in SAS. The int
  you:

       Flexibility--SAS provides data retr
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       Power--Easy-to-use SAS procedures
       results quickly, while a full co
       satisfies programmers' requirem

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  applications with SAS/FSP, to ac
  SAS/IMS-DL/I, and to plan your
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January 17, 1983

Mr. Scott M. Kelly
Thomas Wholesale Distributors
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La Grange Park, IL 60525

Dear Mr. Kelly:

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SAS Marketing Representative

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DATAPOINT
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AI-like package sends helicopter designer soaring

1ST USER

By Paul Gillin
CW Staff

CULVER CITY, Calif. — Can seven Army pilots with no programming knowledge teach a computer to think like a military commander in less than two days?

Analysts at Hughes Helicopters, Inc., a designer of helicopters for commercial and Department of Defense (DOD) use, think they can. As a result, the company became the first commercial user of an artificial intelligence-like software package that reportedly can be used for any application requiring an expert system.

Hughes uses The Intelligent Machine Model (Timm) from General Research Corp. of Santa Barbara, Calif., to simulate the decisions an enemy commander might make when faced with an air attack. The data is used to make design decisions for the helicopters Hughes builds for the DOD.

While Timm is rudimentary in many respects, the analysts have found that the decisions it makes closely parallel those of military experts, according to Bill George, an operations research analyst.

Unusual application

Hughes installed Timm on its Prime Computer, Inc. 400 processor three months ago after it found that no expert systems on the market were suitable for their unusual application. Hughes built its own expert data base by drawing on a group of seven army pilots from Fort Lewis, near Tacoma, Wash.

"We're not experts, so we wanted experts to input the criteria so we can make decisions based on expert knowledge," George said. The pilots spent two days presenting the scenario, the decision structure for the problem, the possible decisions and which factors were important to each decision.

The knowledge base can be built several ways, George explained. The software can randomly generate a scenario and present it to an expert who inputs the best decision under the circumstances. Factors can also be input manually and assigned a weight, or the software can generate a random case and a decision that is approved or corrected by an expert.

To build the war games model, the analysts generated a few random scenarios and then let the pilots take over. "Usually, in a short period of time you have the people sitting down and writing it all by themselves," George said.

Timm prompts the experts to define the problem domain and the set of possible solutions. Each decision adds to the knowledge base, which is capable of storing about 500 rules.

"The more rules you put in, the more intelligent it becomes," George said. "You could crank out several hundred rules in a few hours."

The software is capable of making as many as 25 distinct decisions based upon up to 50 factors and 25 different values for each factor, he said.

Whenever there is a split body of opinion on a decision, the software points out the inconsistency and makes the decision that is statistically the most valid.

All decisions can be rated on a 100-point scale by consistency, and a reliability estimate can also be provided. Timm is also capable of producing a list of the criteria it used to make a decision, George said.

However, Timm does carry a price, George noted. Because the software is application-independent, it is crude as far as specialized expert systems go, he said. It also demands about 20M bytes of virtual memory.

"It's hard to say if this is a true artificial intelligence model, but I don't know of anybody else who has one like it," he said.

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Computer helps clients insure against Mother Nature

By James Connolly
CW Staff

JERICHO, N.Y. — A company bets against Mother Nature here, setting computerized odds on whether it will rain in Miami next week or snow in St. Paul, Minn., next month.

Good Weather International, Inc. arranges insurance for businesses whose economic lives depend on the weather, and it does this by drawing on a data base of more than 200M bytes and a hard-copy library of weather reports going back 40 years from 7,000 weather stations.

For 25 years, Good Weather has arranged insurance for concert and air show promoters, film producers and swimsuit makers who need one-time or seasonal guarantees of sunshine so they can plan their business. Others, such as ski equipment firms and mens' outdoor-ware makers, want wintry weather early and often.

But the company has recently taken on new clients, firms like the Toro Co., which guarantees snow for its snowblower customers, and Republic Airlines, which promises fun in the sun for vacationers.

It's Good Weather International that figures the odds of bad weather and pays up — with financial backing from the American International Group — if the rain hits and the snow doesn't.

"We arrange every conceivable type of insurance that has to do with the weather. We're not dealing with individuals, but with big companies that have seasonally sensitive products. Extremes in the weather play havoc with their cash flows. One bad season, they can generally stand it. But two bad seasons in a row, and they may be out of business. That's where we come in," said Good Weather President Henry Fox.

Good Weather simply determines whether precipitation is likely for a given time period by counting the number of times the National Weather Service has measured even one one-hundredth of an inch of precipitation for a site and date in the past 30 or 40 years.

Until the past few months, those calculations and checks of years' worth of records were done by hand, with Good Weather's staff leafing through weather service reports.

Moving up to a mainframe

Now, with companies like Toro and Republic marketing weather guarantees, Good Weather is experimenting with an IBM System/23 Datamaster office system and hopes to move up to an IBM mainframe, either a Series/34 or a Series/36 next year.

"We have 200M bytes of information just on rain alone, so we are going to need a larger system," Fox said.

"What the computer will let us do is get deeper into what we call weather trending," he continued. "What we have been doing is looking at a 30- to 40-year history and coming up with odds. What is more important is the trend."

Fox, who hired programmers to work in-house on the projection programs, won't reveal his company's accuracy rate. But he maintained, "We do have an excellent success rate because we are dealing strictly with the law of averages. We will pay some large losses. Some people will beat us, as the case may be. But with the law of averages, we usually come out ahead."

On the average, Good Weather — which writes policies on behalf of many of the 200 insurance companies that are subsidiaries of American International Group — sets premiums of 5% to 10% to insure single events, such as concerts, against rainouts or to offer swimsuit manufacturers guarantees against poor vacation seasons. Good Weather is managing general agent for the insurance group.

Toro spokeswoman Jane Cella declined to reveal what premiums Toro is paying for its promotion, in which the company offers full rebates to snow-thrower purchasers if the snowfall is less than 20% of the local norm and 50% rebates if the snowfall is 20% to 50% less than the norm.

Republic ticket holders traveling to Southern California, Florida and Arizona are guaranteed their money back if it rains between 10 a.m. and 4 p.m. on more than half of their vacation days.

In Republic's case, the premium costs the airline from 1% of the ticket price to 5%, depending upon the destination.

It is a promotion where Republic reportedly has little risk. A customer buys their original ticket, and if it rains on their vacation, the insurer pays for another round-trip ticket, also from Republic.

The promotions by both companies are being backed by insurance policies arranged through Good Weather International.

Those policies generally are very simply worded, saying that the client can collect if the weather service reports a specific amount of precipitation, or less than that amount in the case of snow, for the dates in question.

Once the policy is written, Fox noted, the question of whether someone collects is determined by the weather service's regular reports, not by Good Weather.

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IEEE forum set for D.C.

WASHINGTON, D.C. — Keeping U.S. technology competitive in the world marketplace into the 21st century will be the focus of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) 1984 Conference of U.S. Technology Policy, scheduled to take place here Feb. 22-23.

The conference will feature 11 speakers, including a yet-to-be-named White House official who will be introduced the evening of Feb. 22 by IEEE President Richard J. Gowen.

The theme of the two-day conference is "Electrotechnology and Innovation: Challenge 21." Dr. Simon Ramo of TRW, Inc.; Dr. George Keyworth, director of the White House Office of Science and Technology Policy; and Dr. Richard DeLauer, under secretary of defense for research and engineering, will open the conference.

Other congressional, industrial and academic figures will also make presentations.

The registration fee is $150 before Jan. 20 and $175 after that date. Registration forms are available from Lisa I. Ladaw at the IEEE Washington Office, Suite 608, 1111-19th St. N.W., Washington, D.C. 20036.

Gould users to meet

ANAHEIM, Calif. — The Gould Users Group will hold a general meeting Jan. 25-27 at the Sheraton-Anaheim Hotel here.

The agenda will include user presentations, workshops, presentations by Gould, Inc. and a panel discussion with Gould management, according to Steve Larkin, chairman of the Gould Users Group.

The advance registration fee is $35 per person; a $10 surcharge will be added to anyone registering the first day of the meeting. The registration fee includes all seminar materials as well as lunch on each day. More information is available from Eileen Lerner, Users Group Administrator, Gould, 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310.

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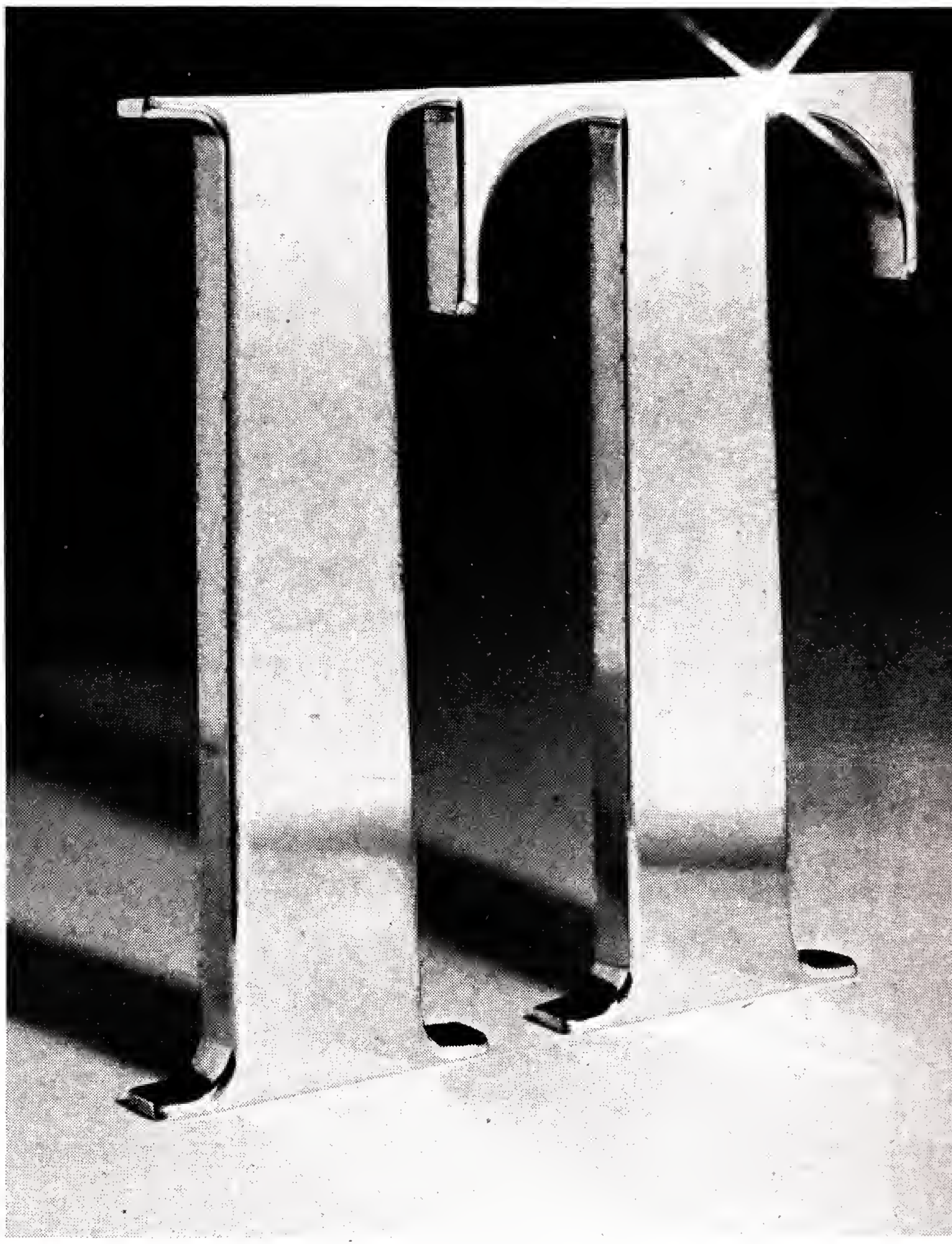

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INTERNATIONAL REPORT

CW INTERNATIONAL NEWS NETWORK

BRAZIL

RIO DE JANEIRO — Brazil's Special Department of Informatics has established new criteria for manufacturers of microcomputers here. Projects that relate to the production of microcomputers will only be approved by the government if the machine's operating system has been developed locally.

RIO DE JANEIRO — Brazil's Association of Information Services Organization last month announced the signing of agreements with IBM and Control Data Corp. for the joint development of products here. Sources said the IBM agreement calls for the translation of IBM documentation manuals; the CDC agreement covers software development, sources said.

RIO DE JANEIRO — According to a recent report from the Special Department of Informatics, Brazil's financial sector is responsible for half the information processing equipment sold in this country. The banks here, which have started to install 24-hour automatic teller machines, are reportedly appealing to the domestic computer industry for more diversification of products.

FRANCE

PARIS — The French Citibank has become the first user here of Wang Laboratories, Inc.'s Wangnet broadband local-area network. Citibank installed the local-area network in one of its new buildings to interconnect hundreds of word processing systems, terminals and Wang CPUs. The bank is now studying the feasibility of connecting IBM machines to Wangnet.

PARIS — What is IBM's answer to the threat posed by Trilogy Systems Corp.? Some are predicting price wars between the two companies in 1985. Others believe the battle will involve IBM's thermal conduction module technology and Trilogy's wafer-scale integration packaging technology.

Speaking on this subject here recently, IBM's director of component research and development, Stephen Paris, said that circuit integration could eventually be improved by two or three times, which would enable IBM to create monoprocessors operating at 15 million to 16 million instructions per second (Mips). At present, monoprocessors execute approximately 7 Mips with thermal conduction module technology.

PARIS — One hundred all-purpose Minitel videotex terminals have been distributed to selected members of the French National Assembly, and an additional 370 terminals will be added to the system by March. In addition to nightly updates on proposed laws, deputies can use the terminals to keep abreast of the daily agenda and for immediate research on legal matters, economic and domestic affairs.

The terminal also serves as an electronic mailbox. The Minitel videotex system interfaces with three separate data bases. The system includes a micro videotex server which stores up to 10 million characters.

JAPAN

MATSUMOTO — Epson Corp., a subsidiary of Seiko Group which manufactures microcomputers and printers, plans to establish a manufacturing plant in California that would begin production by 1986. Last October, the company founded a French subsidiary called Epson France to provide its product line to the European marketplace.

NETHERLANDS

AMSTERDAM — Shares of the Dutch software company Minihouse went "over-the-counter" on the London Stock Exchange recently, a move that sparked general confusion and calamity in the Dutch financial world.

When financiers questioned why the company did not use the Amsterdam Stock Exchange, a company spokesman said London was used for the stock offering because Dutch financial organizations are still reluctant investors when it comes to systems houses and software companies. Minihouse added that its stocks will eventually be made available in Amsterdam.

AMSTERDAM — During the first quarter of this year, European postal, telephone and telegraph (PTT) administrations are expected to connect their X.25 packet-switched public data networks. This month the Dutch PTT will connect its Datanet-1 to England's network, followed by the networks of Belgium, France, Spain and Switzerland. The X.25 networks of the U. S. and Canada and other European countries are planned for a later date, a spokesman said.

The newly formed European network will replace Euronet, but the management company of Euronet will reportedly be maintained.

AMSTERDAM — The European Common Users Group for users of the IBM System/34, 36, 38, Series/1 and 8100 information system is expanding its membership abroad and forming Common groups here and in Scandinavian countries. In Holland, the management of Common will be handled by the Amsterdam-based software house Information Share, a nonprofit subsidiary of Management Share.

HILVERSUM — Sopho-Net is the name of a switching network recently released by Philips Telecommunications BV that works by interchanging packets at high speeds. The product can reportedly handle all types of communications in a unified system of electronic lines.

According to Philips, Sopho-Net was designed to become the keystone of the integrated information network in the "office of tomorrow" and is compatible with all kinds of equipment including systems from Digital Equipment Corp. and IBM.

Further details are available from Philips at P.O. Box 32, 1200 JD Hilversum, Netherlands.

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On-line litigation library built for Baldwin-United case

DAYTON, Ohio — An online litigation information library was recently initiated to serve interested parties in what may be one of the most complicated bankruptcy cases in U.S. history.

Mead Data Central, a division of the Mead Corp., initiated the library in early January on both its Lexis and Nexis information retrieval services.

The library will document the Chapter 11 reorganization of the Baldwin-United Corp. of Cincinnati. U.S. Bankruptcy Court Judge Randall Newsome is overseeing the reorganization.

Baldwin-United and two of its subsidiaries, D.H. Baldwin Co. and Baldwin-United Leasing Co., filed for reorganization under Chapter 11 of the U.S. Bankruptcy Code on Sept. 26, 1983.

Several thousand creditors

There are several thousand creditors involved in the case, ranging from large banks to individuals who purchased annuities from Baldwin's insurance subsidiaries. The reorganization could take up to four years of court proceedings to accomplish, according to a spokesman for Mead Data Central.

Mead Data Central President Jack W. Simpson, in announcing the service, stated, "The Baldwin-United Litigation Library is being created to give debtors' and creditors' counsel [and] news media and other interested parties quick, easy access to the huge volume of material that will be generated by the impending litigation."

Mead Data Central has helped clients create their own private libraries since 1975, but the Baldwin-United library is the first such data base of litigation material on a single case to be open to the public.

The company said a member of one of the creditors' committees involved in the litigation will help prepare documents for inclusion in the data base. New documents will reportedly be available on-line within 10 days of filing with the court.

The library will reportedly contain transcripts of the trial and all public comments filed with the court since the original filing, including affidavits, motions and supporting memoranda, briefs and orders of the court. An on-line index of all documents filed with the court will be available to users of the two retrieval systems.

Nexis is available for a minimum monthly fee of $50, with no charge for the Nexis terminal; Lexis is available for a monthly library access fee of $100 and terminal rental fee of $55 from Mead Data Central, P.O. Box 933, 9333 Springboro Pike, Dayton, Ohio 45401.

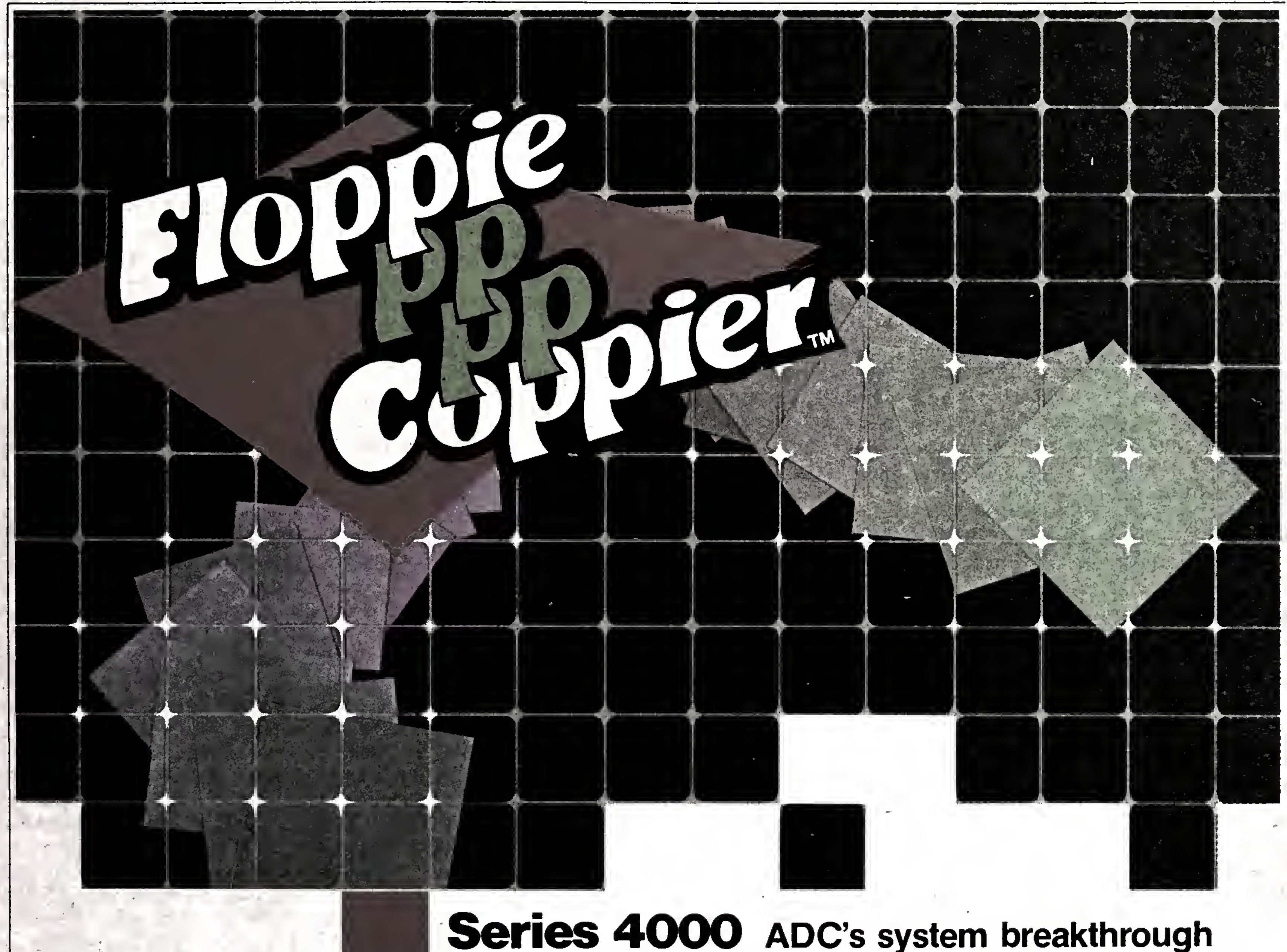
Press office, cabinet tied

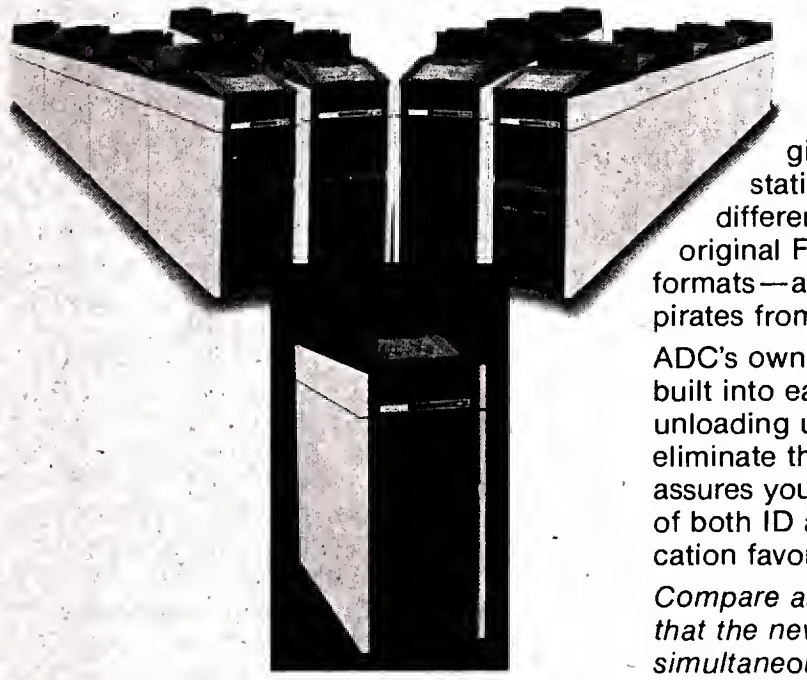
WASHINGTON, D.C. — A computer link was recently established between the White House press office and the public information offices of the cabinet departments to help the flow of information on current issues.

Hooked into IT&T's Dialcom communications system, the press office utilizes an electronic mail system to communicate with the agencies and a news monitoring system to keep up with the wire services.

"The purpose of the online system is to help advise the agencies about what we're saying on issues of interest to them and for them to advise us on background or to give us talking points on current issues which might come up in one of our daily briefings," said Anson Franklin, assistant press secretary for the White House.

With IBM Displaywriters at work in the press office, the communications link has been successful so far, according to Franklin.





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CALENDAR

WEEK OF JAN. 22

JANUARY 23-27, TRUMBULL, CONN. — **Introduction to Unix.** Contact: Gregory Geiger, Bunker Ramo Information Systems, Trumbull Industrial Park, 35 Nutmeg Drive, Trumbull, Conn. 06609.

JANUARY 23-27, DALLAS — **CICS/VS Internals.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

JANUARY 24, NEW YORK — **CICS/VS Logic and Debugging.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Jan. 26 and Jan. 31 in New York.

JANUARY 24-26, SAN JOSE, CALIF. — **Advanced Semiconductor Equipment Exposition and Technical Conference.** Contact: Cartlidge and Associates, Inc., Suite 205, 4030 Moorpark Ave., San Jose, Calif. 95117.

JANUARY 24-26, IRVING, TEXAS — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511. Also being held Jan. 24-26 in Cary, N.C.

JANUARY 24-26, ARLINGTON, VA. — **SAS Basics (Portable) Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

JANUARY 24-27, BOSTON — **Computer Graphics.** Contact: Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

JANUARY 25, TRUMBULL, CONN. — **Unix Marketing.** Contact: Gregory Geiger, Bunker Ramo Information Systems, Trumbull Industrial Park, 35 Nutmeg Drive, Trumbull, Conn. 06609.

JANUARY 25-26, CARY, N.C. — **SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

JANUARY 25-27, EAST RUTHERFORD, N.J. — **The Business Telecommunications Exposition.** Contact: The Exposition Group, 9128 Columbia Ave., North Bergen, N.J. 07047.

JANUARY 25-27, NASHUA, N.H. — **Preventive Maintenance and the Personal Computer.** Contact: New Hampshire College Resource Center, New Hampshire College, 2500 N. River Road, Manchester, N.H. 03104.

JANUARY 25-27, LOS ANGELES — **Computers in Manufacturing.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

JANUARY 26-27, LAS VEGAS — **Computers in Construction.** Contact: CIP Information Services, Inc., 1105-F Spring St., Silver Spring, Md. 20910.

JANUARY 26-28, ORLANDO, FLA. — **The Southeastern Regional Office Machine Dealers Association Meet (Seromda '84).** Contact: Seromda, Inc., Suite 205, 5115 Maryland Way, Brentwood, Tenn. 37027.

JANUARY 27-29, HOUSTON — **Resource '84.** Contact: Joyce Fadem, Professional Resources, Inc., P.O. Box 740433, Houston, Texas 77274.

WEEK OF JAN. 29

FEBRUARY 1, NEW YORK — **Advanced Dbase.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 1-2, DALLAS — **Recovery/Restart.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

FEBRUARY 1-2, SUNNYVALE/SAN JOSE, CALIF. — **Data Communication for Personal Computers.** Contact: Center for Advanced Data Processing, Inc., Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

FEBRUARY 1-3, LOS ANGELES — **SAS Macro Language Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

FEBRUARY 1-3, NEW BRUNSWICK, N.J. — **Data Base Management.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held Feb. 6-8 in San Jose, Calif.

FEBRUARY 1-3, KANSAS CITY, MO. — **Office Automation and Integration.** Contact: Data-Tech Institute, 386 Franklin Ave., P.O. Box 569, Nutley, N.J. 07110. Also being held Feb. 8-10 in Boston.

FEBRUARY 1-3, HOUSTON — **Unix.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held Feb. 6-8 in Boston.

FEBRUARY 1-3, HOUSTON — **The PC World Exposition.** Contact: Karen Bartnicki, CW Communications, Inc., 375 Cochituate Road, Box 880, Framingham, Mass. 01701.

FEBRUARY 1-3, ANAHEIM, CALIF. — **Networking Personal Computers.** Contact: Data-Tech Institute, 386 Franklin Ave., P.O. Box 569, Nutley, N.J. 07110. Also being held Feb. 8-10 in Washington, D.C.

FEBRUARY 1-3, ST. LOUIS — **Data Communications Systems.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held Feb. 6-8 in Pittsburgh.

FEBRUARY 1-3, DALLAS — **Relational Data Bases.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880. Also being held Feb. 6-8 in Boston.

FEBRUARY 1-3, SAN DIEGO — **Network Communications Protocols.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held Feb. 6-8 in Atlanta and Feb. 15-17 in New York.

FEBRUARY 1-3, DETROIT — **Personal Computers and Networking.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held Feb. 6-8 in Houston and Feb. 13-15 in Montreal.

FEBRUARY 2, NEW YORK — **Word Processing With Wordstar.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 2-3, BOSTON — **Automating Rehabilitation Facilities With Microcomputers.** Contact: Management Information Systems, National Easter Seal Society, 2023 W. Ogden Ave., Chicago, Ill. 60612

FEBRUARY 2-3, ORLANDO, FLA. — **Local Networks: Strategies for Success.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424. Also being held Feb. 9-10 in Phoenix, Feb. 16-17 in Washington, D.C., and Feb. 29-March 1 in San Francisco.

FEBRUARY 2-3, WASHINGTON, D.C. — **Micro/Personal Computer Operating Systems.** Contact: Software Institute of America, 330 Salem St., Wakefield, Mass. 01880.

FEBRUARY 2-3, DENVER — **Networking Personal Computers.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held Feb. 6-7 in St. Louis.

FEBRUARY 2-5, HOUSTON — **IBM PC World Exposition.** Contact: Mitch Hall Associates, P.O. Box 860, Westwood, Mass. 02090.

FEBRUARY 3-5, RENO, NEV. — **Sage Faire '84.** Contact: Sage Faire '84, 4905 Energy Way, Reno, Nev. 89502.

WEEK OF FEB. 5

FEBRUARY 6, NEW YORK — **Introduction to IBM Personal Computer.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 6-7, DALLAS — **Managing Information Centers Effectively.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138. Also being held Feb. 13-14 in Cincinnati.

FEBRUARY 6-8, NEW YORK — **X.25 and Packet-Switching Networks.** Contact: Systems Technology Forum, Inc., 9000 Fern Park Drive, Burke, Va. 22015.

FEBRUARY 6-8, BOSTON — **Relational Data Bases.** Contact: Software Institute of America, 330 Salem St., Wakefield, Mass. 01880.

FEBRUARY 6-8, BOSTON — **Networking Personal Computers.** Contact: Personal Computer Management Association, 11928 N. Earlham, Orange, Calif. 92660. Also being held Feb. 13-15 in Denver and Feb. 27-29 in Orlando, Fla.

FEBRUARY 6-8, WASHINGTON, D.C.— **Data Communications: Network, Design and Optimization.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

FEBRUARY 6-8, WASHINGTON, D.C.— **Introduction to Data Communications.** Contact: Systems Technology Forum, Inc., 9000 Fern Park Drive, Burke, Va. 22015. Also being held Feb. 22-24 in New York and Feb. 27-29 in Denver and San Francisco.

FEBRUARY 6-8, ORLANDO, FLA. — **DP Disaster Recovery.** Contact: EDP Security, Inc., 181 West St., Waltham, Mass. 02154.

FEBRUARY 6-8, MINNEAPOLIS — **Micro and Personal Computers: Technology and Application.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

FEBRUARY 6-9, NEW YORK — **IMS/DB (DL/1) Application Programming.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

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EDITORIAL

Interesting deal

Until recently, IBM's information center has been a lot of bark without much bite. While the goals of the information center are well considered — to provide a means for end users to do their own computing — IBM had been reluctant to throw its weight behind any of the myriad software vendors now providing information center tools.

All that is changing now. The announcement this month of a "complementary marketing agreement" between IBM and Comshare, Inc., which makes the System W decision support system, marks another in a series of Big Blue moves to provide some direction to the proliferating information center market.

The IBM-Comshare deal [CW, Jan. 9] followed three important IBM announcements last year. One was an agreement to sell Intellect, the natural language query and reporting product from Artifical Intelligence Corp. of Waltham, Mass. The second was IBM's announcement of an in-house version of its Application System data management and information retrieval package. The third was IBM's announcement of DB2, a relational data base management system targeted primarily for information center use.

The most interesting aspect of the Comshare announcement was its language. While the deal clearly amounts to an endorsement of System W, IBM was emphatic in refusing to term it a joint marketing agreement. IBM sales representatives reportedly will not sell System W, but will be instructed to recommend it as the primary DSS for IBM environments. Comshare will still be charged with selling, supporting and providing end-user training for the software.

In addition, IBM has left itself a convenient "out" in case it takes a shine to a new piece of DSS software. While IBM sales reps are directed to pass along sales leads to Comshare, they are not embargoed from recommending alternative vendors if they so choose.

Therein lies the consolation for the DSS vendors that were passed up by Big Blue. Considering that System W has been available in package form for barely a year, it was a bold decision for IBM to choose it over such veteran players as Execucom Systems Corp.'s IFPS, Management Decision Systems, Inc.'s Express and EPS, Inc.'s FCS. However, the agreement is hardly a repudiation of those vendors.

In fact, an IBM spokeswoman said the Comshare deal will be the first of "many announcements" of a similar nature. IBM also said it would continue to offer IFPS on its Information Network, an escape hatch allowing the company to stop short of an all-out endorsement of System W.

At the risk of sounding trite, it is safe to say that users will be the big winners in this latest IBM marketing foray. By bringing Comshare under its wing, IBM has assured customers that the System W software will always be in step with its hardware and operating system environment. In promising future agreements of the same kind, IBM has also hinted that users considering an information center will soon have a range of stable software products from which to choose, all of them blessed and insured by IBM.

With the possible exception of Comshare's competition, software vendors should also take heart from the announcement. In effect, IBM has said that it is willing to endorse a quality product, even if it competes in some areas with IBM software.

Moreover, IBM's success in opening the Personal Computer market to third-party software vendors has apparently led the computer giant to reconsider its attitude toward independent vendors in the mainframe arena. Independents should be encouraged by the message that IBM will look favorably upon software that will help it sell hardware, even if the code originates outside the company.

LETTERS TO THE EDITOR

Electrical matters

Two items in Leo Sharkey's article, "Reorganization Spurred by Manager's Experience" [CW, Dec. 12], require some comment.

The article states: "But Edison could not produce less electricity even though industries were using less." This implies erroneously that a utility generates more electricity than is being demanded by its customers at a given moment. This is a physical impossibility. Detroit Edison and every other electric utility produces exactly the amount of power its customers demand.

Next, the article says: "To halt a power plant's motion, even momentarily, would result in a fatal flat spot on the turbine." I am somewhat at a loss to address the "fatal flat spot on the turbine." Perhaps an oblique reference is being made to the steam turbine rotor distortion that can occur when a spinning rotor is brought to complete rest while the turbine is still hot. Unequal thermal stresses along the vertical diameter of the rotor will cause this massive hunk of metal to distort and bend. Realizing that the parts inside huge steam turbines are fitted to watchmaker tolerances, rotor blades will make contact with stationary components. The result is one bound up mess from which it is extremely difficult to recover.

Peter Kushkowski
Manager, Process Computer Engineering
Northeast Utilities Service Co.
Hartford, Conn.

Computerworld** welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purposes of clarity and brevity. Letters should be addressed to **Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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VIEWPOINT

Just what is quality, anyway?

QUALITY

WAYNE SMITH

Over the next several months, this column will be focusing on software quality and how senior management, together with information services management, can establish and operate a quality data processing function. This will not be a technical dissertation on techniques, methodologies and standards, but rather a look at the issue from an organizational and management viewpoint. Fundamental underlying principles regarding quality programs, their critical success factors and how, specifically, a quality information services organization can actually contribute to improving an organization's bottom line will be discussed. Furthermore, the topics discussed are all well within our current capabilities.

The principal question surrounding any attempt to establish a quality function effectively is: What is quality, anyway? That quality is felt to be a somewhat desirable but, nevertheless, unrealistic and unattainable goal for an information services function is the biggest hurdle senior management must overcome.

No real quality breakthrough will occur until senior management changes its long-held beliefs and opinions that quality is expensive, unattainable and subjective.

These cultural changes are always slow to take place. Moreover, it appears that two major roadblocks stand in the way of a real quality breakthrough:

■ Senior management does not yet recognize that quality in information services is not a subjective measure of relative goodness, but rather is simply "Doing exactly what we say we are going to do, when we say we are going to do it."

■ Information service's inability (along with the quality assurance function's inability) to quantify the cost of quality effectively in the organization. That is, what is the actual cost of shipping defects into production (it is probably several times greater than you think it is), how expensive are missed schedules, what business opportunities are lost (or delayed) due to poor requirements analysis and so on.

First roadblock

The first roadblock, because it has to do with the perception of quality in the organization, represents the essence of the problem. Recognizing that quality is nothing more than meeting requirements and that quality information services is the best road to improved productivity requires more than an intellectual understanding by management; it must become part of its mind-set and must positively affect day-to-day decision making. For too long, quality issues were relegated to the technical staff for solution. And, of course, their solutions were primarily technical in nature. Accordingly, there was heavy emphasis on tools, techniques and methodologies that addressed the program development and coding components of the project. As a result, the quality orientation was a technical orientation, focusing on only 10% to 30% of the project effort without exploiting the real quality leverage, namely, the management and organizational strategies.

But what does this new definition of "quality" mean? Embedded in the notion that a quality system is a system that meets requirements are the following issues:

■ The organization must invest in the development of a well-defined, complete and verifiable set of requirements before design and programming begins. This includes not only the traditional business requirements, but also the technical, production and maintenance requirements. In other words, if it is an important enough issue to the organization, then it is worth attempting to define it in the requirements document.

■ These requirements must all meet the following constraint: Can I set up a process whereby an independent agent can verify that the delivered product meets

See **QUALITY** page 32

Users, DPers should change micro views

HUMAN CONNECTION

JACK STONE

Although sometimes it doesn't seem so, there truly is a farsighted segment of the data processing community that recognizes that the personal computer in stand-alone mode offers cost-effective solutions to a vast number of "smaller" information handling problems that are far too costly to implement on terminal-oriented minis and mainframes. These DPers also appreciate that the added processing overhead on the larger machines is only one factor that is eliminated when the micros off-load some of the work. Just as important, if not more so, is the relief accruing to the analysis and programming teams that can reduce the level of ongoing systems support to the smaller users and devote more of their energies to the solution of the "larger" business problems.

There is no question that end users and DPers alike benefit from the growth of personal computers. Processing power is decentralized in parcels appropriate to operational needs; general-purpose applications packages make the micros a lot easier to work with and faster to adapt to particular requirements; and organizational structures make adjustments in internal procedures to streamline the manual data-handling functions.

Broader scheme of things

But in the broader scheme of things, perhaps the most significant payoff of all is that many users become more knowledgeable about computerized systems, some even achieving high levels of operational independence and the concomitant rewards of reduced frustration and increased productivity. As a result of the experience, enlightened DPers learn that it is in their best interests to support the acquisition of personal computers and, thereby, to relieve the burden of ongoing support.

Unfortunately, such knowledge falls short for a great many people in our industry who evolve distorted, if not widely exaggerated, claims about the role that personal computers should play in modern enterprise.

For example, on the business side, there are those who avow that their flock of personal computers will eventually replace the mainframes because of their attractive operability, maintainability and economic factors. Yet equally bizarre notions are found on the DP side, generally involving the pooh-poohing of personal computers' capabilities and their downgrading to the level of toys, plus the alleged waste of money and manpower in user departments stemming from poor systems designs.

Role of the personal computer

Of course, the role of the personal computer is found in its generic name: personal computers are valuable and cost-beneficial for those information needs of a "personal" nature. One can spend months researching the classes of problems that fall into this category, or take my simplistic approach in which I loosely define "personal" applications as those that are solvable by the computing power you can acquire for $5,000, a somewhat arbitrary clip level, perhaps, but not an unreasonable one in today's budgeting circumstances.

And these days, this investment buys computing components that are vastly improved over those of the first generation: a hard disk that, at last, provides popularly priced storage for decent-size — megabyte — files; a vast amount of random-access memory — several hundred kilobytes — to aid the functionality of OS controls; 16-bit technology — edging rapidly into 32 — for speedier calculations; a wide selection of I/O devices for special needs; better-than-ever software to increase personal productivity; and, of course, communications facilities to allow terminal access to larger machines.

To sum up, those users and DPers given to overstatements or understatements should moderate their views toward personal computers and accept the fact that personal computers represent only another set of options available for the organizationwide automated information system. Nothing less and nothing more. ‡

Bilingualism and the law

READER'S PLATFORM

ROY N. FREED

A serious language barrier separates many lawyers and computer executives without their ever being aware of that fact or of its adverse impact on many lawyers' clients.

Lawyers are making the great mistake of aping the language of the industry, usually without knowing that it is inapplicable to them, except as they are customers in the marketplace. In handling legal matters, they talk "computerese" either to appear knowledgeable or because they don't know any better. In doing so, they shirk their professional responsibilities to their clients. Their clients talk computerese to them, not realizing how their valuable legal interests suffer in the process.

Consider in this regard the following actual, but camouflaged, example. In the acquisition agreement for an important transaction between a developer and a large manufacturer involving a novel, plug-in printed-circuit board and a related software program, a lawyer in a major Chicago law firm defined the term "product" to mean both the board and the magnetic diskette and related other material for the program. He then provided that the developer would deliver the product for evaluation and that the manufacturer had an option to buy the product if it liked it. He failed to recognize that, while his client needed these tangible things in order to assess the marketability of the product, the client would have to buy the know-how and copyrights in the diskettes and written materials in order to have the right to make and sell the product.

The lawyer was taken in by the way his client described the transaction. In the process, he failed to protect his client. His elegant agreement, actually based on a real estate form, would not have gotten for his client the very property rights intended to be secured for the high price if the seller's more sophisticated lawyer didn't pick up the fundamental flaw. This is not an isolated example.

Valuable properties

The valuable properties of many software houses and computer manufacturers will continue to be in jeopardy until their lawyers and executives become bilingual in their

See **LAW** page 35

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QUALITY

from page 31

that requirement. In other words, can it be reliably tested?

The requirements document is the most critical user document produced. As such, it must be the final source of what the system must do. And, of course, it must be under stringent change control.

Finally, the user, project manager and information services management must all agree that this step is critical and not just a necessary evil before we can start programming.

If the required cultural changes can take place in this area, then an organization can begin to take advantage of the true productivity benefits associated with delivering systems and data that do the job right the first time.

The second roadblock is due largely to a failure on the part of information services (with a notable lack of help from the quality group, if one even exists) to quantify clearly in dollars and cents the very real, tangible and direct costs of quality in a data processing organization.

Three components

Quality costs can be thought of as consisting of three components:

- *Prevention.* The cost associated with establishing an environment that reduces the likelihood of flaws being introduced into a system, such as training and standards.
- *Appraisal.* The cost associated with identifying flaws during the process, such as reviews and testing.
- *Failure.* The cost associated with both internal and external systems failure, such as rework and lost business.

Failure costs are, by far, the largest of the three.

Very few managers understand this equation, nor do they fully understand the "physics" of building reliable software. It is becoming increasingly clear when one examines the wealth of data and experiences on systems development that application development projects fall into several broad classifications that exhibit similar characteristics.

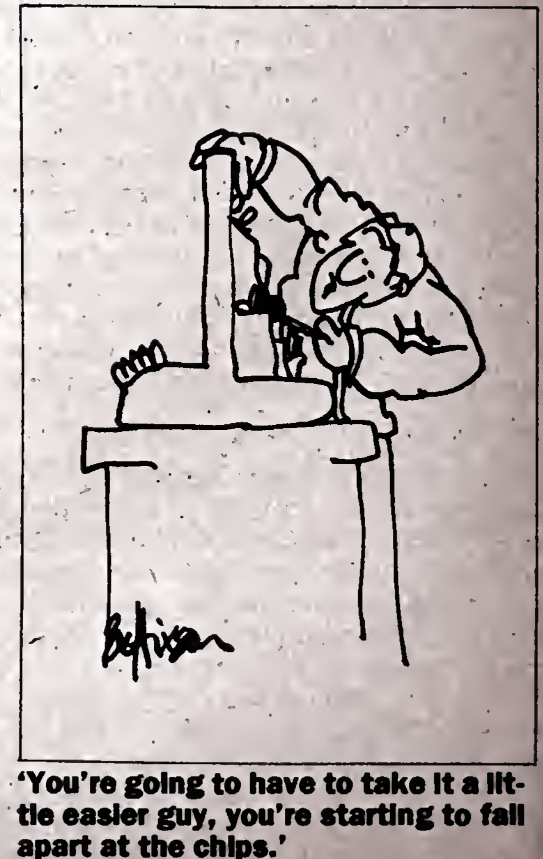
Furthermore, there are built-in casual relationships that can be exploited. For example, if one wants to control a particular dimension of a development effort, then one must have a disciplined control system for monitoring, measuring and reporting on that dimension. The typical dimensions are: time, cost, functional scope and user satisfaction. Another, by now almost classic, characteristic is that defects are exponentially more expensive to correct as the life cycle advances or that time, cost and functionality (even as rudimentarily measured by means of lines of code) define a feasible (and a corresponding unfeasible) region for project success. Further, these relationships are valid for most of what we refer to as maintenance efforts as well as for development.

Yet, there are hundreds of information services groups that every day start high-risk, high-user-expectation projects with no control systems, minimal disciplines and no true user or management commitment — projects that the "physics" would predict are going to be unsuccessful, high-cost, never-ending projects that won't fully meet the needs of the organization in any event.

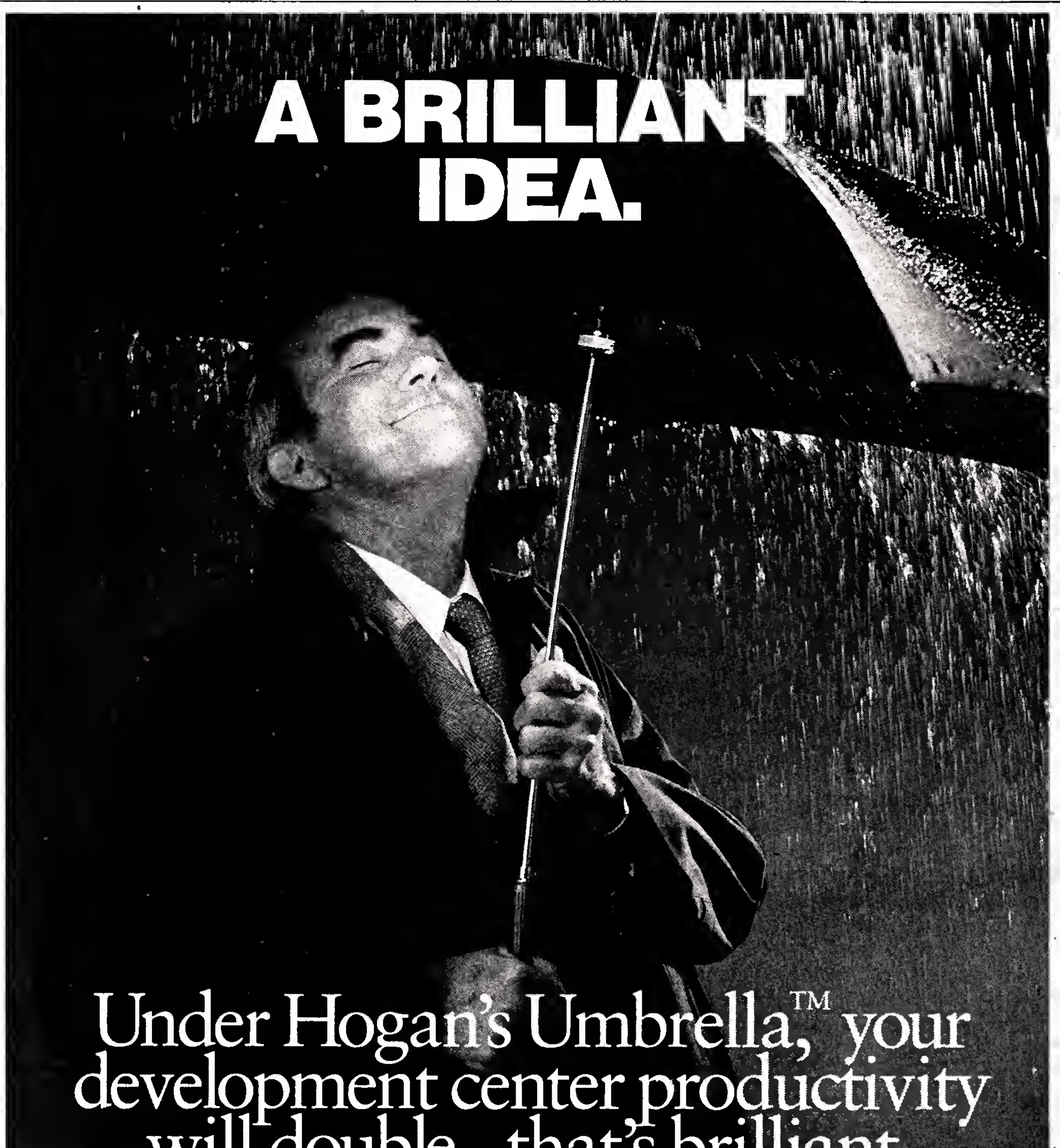
To help companies compute the costs of quality related to information services, Guide, the IBM user organization, has established what may well be the single most significant effort related to quality costs in the industry via its recent Cost-of-Quality project. The results of this effort will be a substantial step toward not only changing senior management's beliefs and opinions regarding quality, but also in providing a process whereby quality costs can become an inherent and quantitative part of management's planning and decision making.

Quality is not only within our reach but, in many cases, well within our current capabilities. Further, quality data processing may be the best way for organizations to maintain (or even to raise) their profit margins without raising their prices. A quick assessment of failure costs in data processing can often uncover startling opportunities for cost reduction and profit improvement, to say nothing of improving customer relations and increasing business opportunities. The industry has matured now to the point where commitments to a quality information services organization are not only appropriate, but are essential if information services is to play any significant role in company management, direction and performance. ‡

Smith is president, specializing in quality, at Applied Information Development, Inc. in Oak Brook, Ill.



'You're going to have to take it a little easier guy, you're starting to fall apart at the chips.'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All I wanted was to buy a bag of groceries

READER'S PLATFORM

TERRIL J. STEICHEN

The other day I wrote out a check to pay for groceries. The clerk told me, while looking over my check, that in the near future, the store was starting a new computerized check-approval system. I would have to make a new application if I wanted to keep paying for food with a check.

After over five years of biweekly or triweekly visits to this particular store, I didn't understand why I had to make out a brand-new application. But curious, I asked for a blank application.

The old system simply kept track of bad checks. If a person wanted to continue to cash checks, he had better not write checks he couldn't cover. It was simple. Apparently, it was too simple.

New form

The new application form demanded that I tell them my social security number (are they going to attach my old-age pension?), my drivers license number (which is the same), how old and fat I am, who is silly enough to employ me and where that silly employer does business — all of that in addition to the normal address and phone numbers.

Why, I asked, did I have to give out all this information just to continue to buy groceries as I have been doing for five years? "Because the old system didn't work well enough," the manager explained. I persisted a bit, though the manager looked increasingly uneasy and exasperated. "But why pick on me? I've never written a bad check?"

"You don't seem to understand," he said (this phrase became pretty familiar the more I pursued the matter). "The old system let too many bad check writers write bad checks."

New check approval

Now that, of course, makes sense. Because of the normal float and other delays, unscrupulous or careless people can go on for a long time before their bad check records catch up with them. I'm sure that the new computerized check approval system will be more effective at catching bad checks than the old one was. All that data about how old and fat I am could be useful in tracking me down, if need be. And to store and retrieve that extra information only takes a few more fields on the computer record — pretty trivial, from the technical standpoint.

There is only one problem. It takes me — a person with an unblemished record of trustworthiness (at least from the standpoint of my checking account) — and dumps me into a pot with the worst thieves in the country. For the store's ease of screening out crooks, I am presumed to be a crook until proven otherwise. That's just fine for the store and for the data processing processors. But what about me?

I don't like the mistrust and presumption of guilt that seems to come with so many computerized applications. Why does a store clerk have to presume every customer is in the credit companies' bad-credit listing, forcing me and all the other customers to wait while the clerk proves that is not so? In my case, I could have told him so if only he had asked me.

America is the world's great melting pot. That's a great concept because it means that we take the best the rest of the world has to offer, put it all together and come out with something even better — or that's what I thought it meant. But with the way that businesses are computerizing that melting pot, it seems as though something is changing, something quite important.

That's not logical, I know. It won't compute. But it bothers me. ‡

Steichen is president of New Perspectives Group, Ltd., a consulting firm based in Fairfax, Va.

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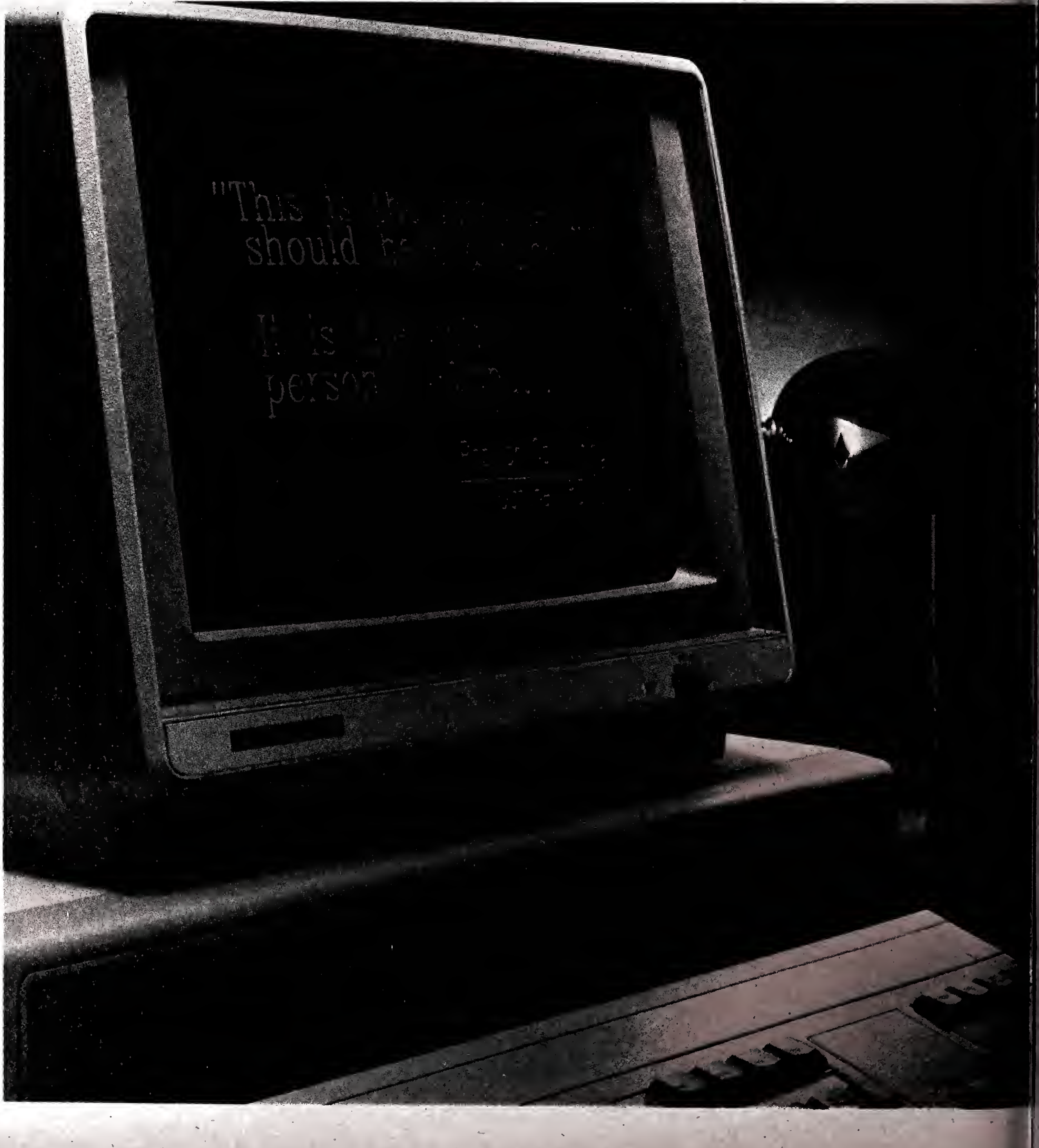


LAW

from page 31

respective languages. The property interests involved, although entirely traditional, are new to most lawyers, and they are prevented from recognizing those interests by the shorthand terms computer people have adopted for business purposes.

Being intellectual property rights, such as copyrights, trade-secret rights and patents, those interests are extremely fragile. They can be lost forever if they are not established firmly at their very inception. Lawyers and computer people, who ordinarily speak entirely different languages, simply must start communicating with each other effectively.

Out of pure self-protection, computer executives have to learn the types of properties their companies are involved with. They have to think in terms of copyrights, trade-secret rights and patents — the intellectual property rights. Tangible items reflect things in which those rights exist, being information in the case of patents and trade-secret rights, and ways of setting forth information in the case of copyrights. They are not necessarily the real subject matter of many transactions. Permissions to enjoy intellectual property rights owned by others are granted, and received, by licenses. With that knowledge, executives can guide their lawyers in designing transactions, or at least not divert them.

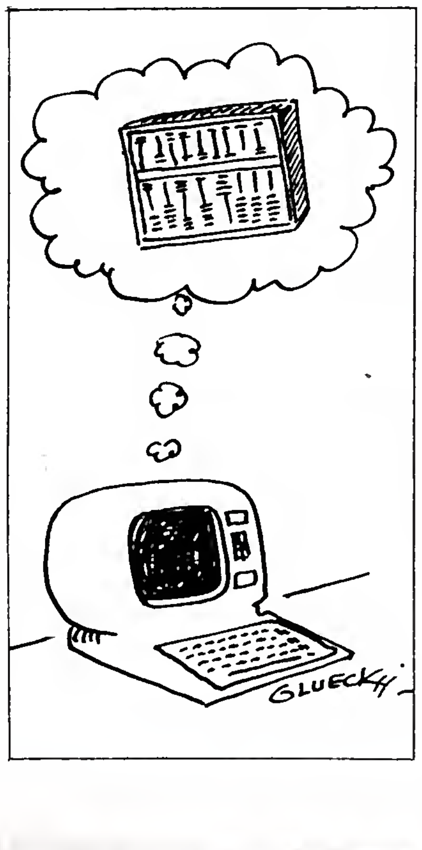
The word 'software'

Take the word "software," used as a noun, as another example. While business people usually are understood by their peers when they speak of "selling software," lawyers need more specific characterizations of the possible transactions in order to advise their clients correctly on tax liabilities, liability exposures and property interests. The rules of law in those and other areas are divided into many categories that have different qualities and consequences. Most of those categories continue to be applicable in the computer age. Sales taxes apply to transactions whose principal purpose is the transfer of tangible personal property at retail, such as the outright sale of a prerecorded diskette for a microcomputer program; they should not cover licenses to use trade-secret information about software programs until the legislatures so provide. Tangible personal property taxes apply to the ownership of that property, but not to a license to use such information. Similarly, the federal investment tax credit applies to tangible personal property but not to intangible property until Congress provides otherwise.

Knowledge of those different qualities is supposed to make it possible to predict legal treatments of actions under various circumstances. Predictability is essential in selecting business policies and designing business arrangements. It is essential in controlling costs of legal services and achieving desired property interests. Lawyers are expected to be able to predict legal treatments in most situations that confront their clients, and they should have the means to do so, largely through understanding the subject matter despite the computerese.

Hence, lawyers have to become proficient in translating from the computerese of "software" to the various intellectual property rights involved in particular situations. When they do, their clients will start to secure the level of legal service for which they are paying right now. ‡

Freed is a partner in the Boston law firm of Brown, Rudnick, Freed & Gesmer.



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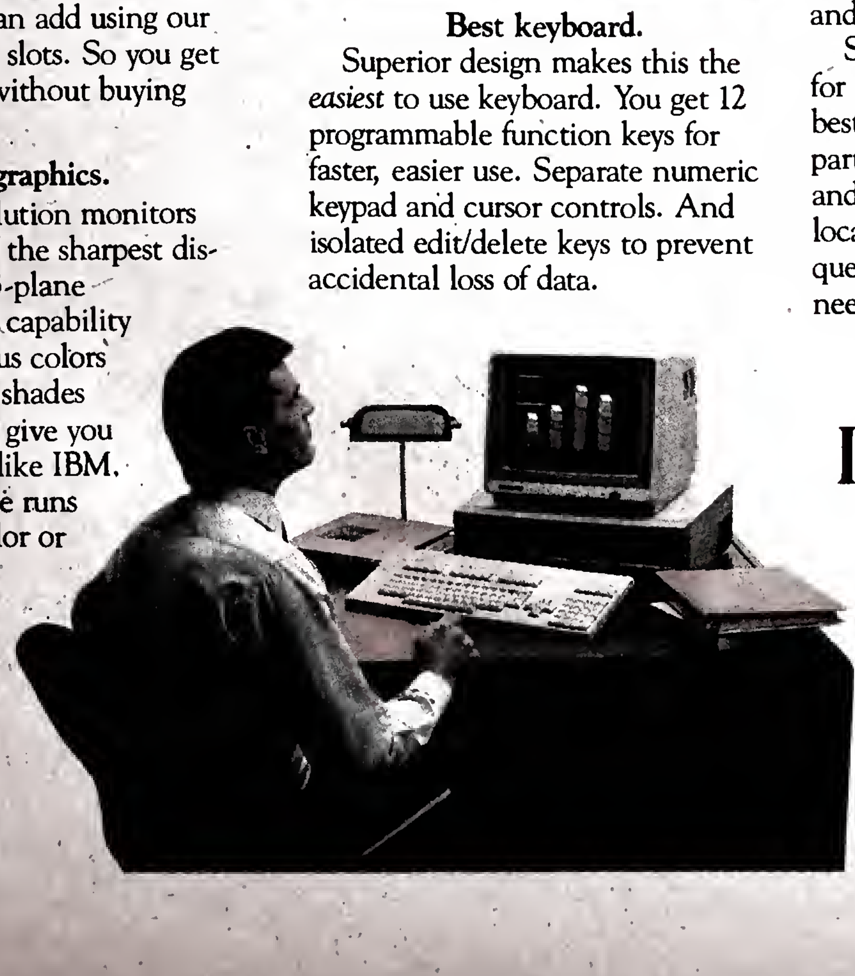

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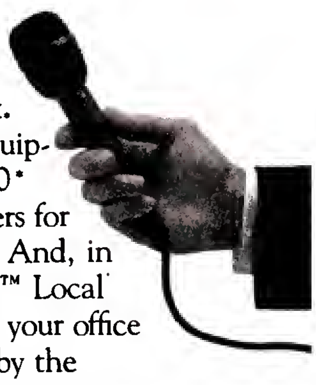

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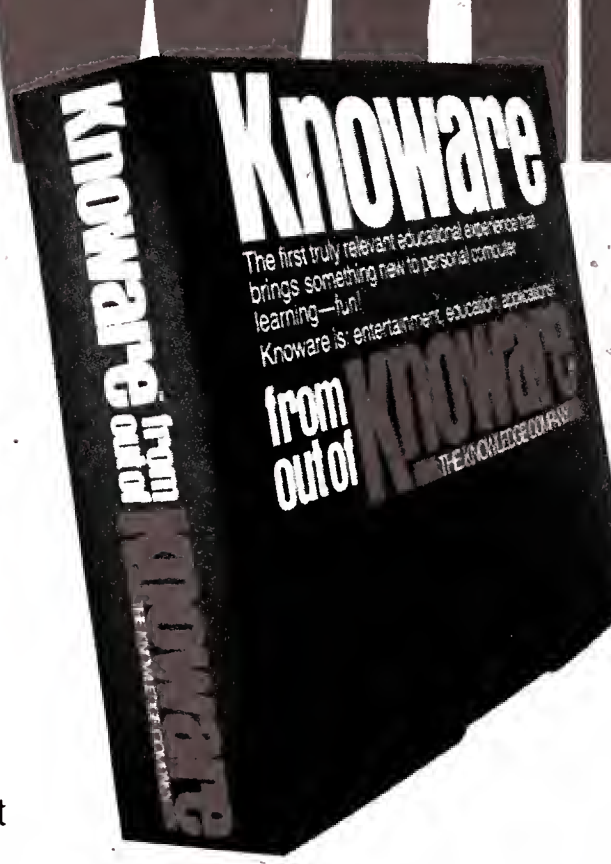
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SOFTWARE & SERVICES

Alleviating backlog

Normalization technique a solution

By Joseph Toscano
Special to CW

The applications backlog, which averages 2½ years across the industry, has spawned the development of hundreds of new software products recently. Experts agree there are two ways to alleviate the problem. One is to increase the efficiency of DP professionals. The second is to provide end users with the capability of fulfilling their own requests. Either course requires that a manageable data storage and structure technique be provided.

Ideally, this technique would result in data arranged in the same logical and ordered format as it was prior to computerization, somewhat like a filing cabinet, but without the duplication of data across different departments.

This simple format is commonly referred to as a normalized data structure. Normalization is the process of unbundling and decomposing data to reflect logical information requirements.

Data base management systems (DBMS) are now expected to do more than merely store and control data. They are expected to provide a simple yet efficient means to fulfill information requirements. As a result, relational technology has received wide acceptance. So has the idea that data should be broken down and stored in a more fundamental form, whereby elemental data values can be utilized in a data base designed for greater flexibility. This is normalization.

In its simplest form, normalization is the process of structuring data so that it reflects the information requirements of the company and is never duplicated. Normalization cannot make conventional DBMS easier to use if navigational requirements are placed on the user or programmer. In a relational DBMS, the tabular files are navigated by the system itself. Normalization is ideally suited to relational data bases.

Normalization eliminates duplication of data, retains the logical relationships and

See **DATA** page 38

'Monitor' update out for CICS

Landmark Systems Corp. has announced Release 6.0 of its Monitor performance monitor and reporting system for users of IBM's CICS Release 1.5 and higher in IBM DOS/VSE, VS1 and MVS environments.

According to Landmark, the new release features an Activity Data Collection facility that captures all transaction-level resource utilization information on a high-performance Vsam data set. Advanced file design is said to ensure high performance and flexibility, and batch facilities are also provided, including a report writer plus a bridge which allows translation of Monitor data into IBM's Performance Analyzer II format.

The Online History Review is said to allow graphic or detail replay of CICS events and performance for any part of the day. A selection facility allows the user to look at the activity for specific transactions, programs, terminals and time periods. The package's Supertrace feature reportedly provides a selective, on-line transaction and system tracing capability that aids in tuning applications or in problem determination.

Features file analysis

Release 6.0 also features File Analysis, which gathers performance information for each file and DL/1 data base access and provides an on-line display of activity by channel, control unit, volume or file. An Extended Task Analysis facility allows on-line analysis of problem events.

The permanent license fee for Release 6.0 of the Monitor for CICS is $13,500 for the VS1 and MVS environments and $6,500 for the DOS/VSE environment, according to a spokesman for the vendor.

Landmark Systems, 4701 Upland Drive, Alexandria, Va. 22310.

Ada nearly ready for IBM micro

SOFTALK

PAUL GILLIN

In this age of the microprocessor, it seems nothing is legitimate unless you can run it on your IBM Personal Computer. The Ada programming language is no exception.

Alsys, Inc. of Waltham, Mass., plans to give Ada enthusiasts that capability later this year with two validated compilers for Intel Corp. 8086-based and Motorola, Inc. 68000-based microcomputers. The company will also offer a line of computer-assisted instruction software and videotapes and a set of canned Ada routines that businesses can buy rather than build themselves.

Cramming the technically rich Ada language into a micro has presented problems, according to Charles C. Patrick, Alsys' vice-president of marketing. "Developers have pretty uniformly had difficulties with compile times," he admitted. "But we're expecting to learn a lot from running and improving the compiler. We also expect hardware to continue making breakthroughs."

What is most interesting about Alsys' plan is its approach to portability. A key strength of Ada, which was commissioned by the U.S. Department of Defense (DOD) for military applications, is standardization. In order to bear the Ada name, a compiler must undergo a rigorous series of DOD-administered tests that involve running over 2,000 Ada programs. In theory, any Ada program should run on any Ada compiler.

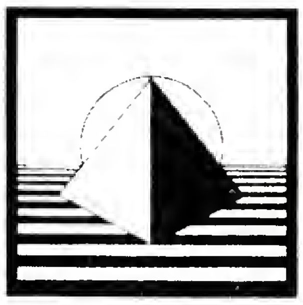
Alsys hopes to overcome the issue of machine incompatibility by creating a "root" or front-end compiler that makes up about 80% of the total compiler code. Individual vendors can license the root, which is called Alsykit, and add the other 20% to customize the software to their own machines.

Alsys said that Alsykit can save a customer two-thirds of the cost and 80% of the time required to develop a validat-

See **ADA** page 42

MEGAGROUP

Filing, multiple spreadsheet package out for IBM mainframes/**46**



Application development tool runs on System/36/**46**

INSIDE

- CICS security system bows/**42**
- Sperry users get performance management tool/**42**
- Informatics T/S offers electronic mail/**50**

OS/MVS-VS1 USERS: How to Distribute DP Expenses Equitably to User Budgets.

Total DP expenses

When data processing costs are treated as a single overhead expense, DP management is at the mercy of user demand . . . and unable to defend itself from cost-cutting measures from above.

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Dept. B
Dept. C
Dept. D
Dept. E

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Name ______ City ______
Title ______ State ______
Company ______ Zip ______ Phone ______
Address ______ Operating System ______

CUSTOMER INFORMATION					POLICY INFORMATION					POLICY INFORMATION				
NUMBER	NAME	ADDRESS			NUMBER	TYPE	BILL DATE	AMOUNT	SALES CODE	NUMBER	TYPE	BILL DATE	AMOUNT	SALES CODE
100	Bill Jones	123 Main St. NY	NY	10019	28755	Auto	2/30/84	534.00	1	14590	Fire	5/20/84	250.00	3
200	Ed Wilson	5 Third Ave. NY	NY	10017	12532	Fire	4/21/84	240.00	3	76890	Life	7/08/84	124.00	12
300	Mary Smith	21 Park Dr. Chicago	IL	60655	56432	Hlth	3/11/84	576.00	17					
400	Bob Martin	6 Line Ave. Buffalo	NY	14202	89241	Auto	1/01/84	467.00	21	19834	Life	2/15/85	124.00	22
500	Jill Benson	18 Lake Pl. Warwick	RI	02886	40829	Life	4/24/84	227.00	9	32456	Auto	4/24/84	525.00	8

Figure A: Unnormalized data structure

CUSTOMER NUMBER	CUSTOMER NAME	ADDRESS	CITY	ST.	ZIP
100	Bill Jones	123 Main St.	NY	NY	10019
200	Ed Wilson	5 Third Ave.	NY	NY	10017
300	Mary Smith	21 Park Dr.	Chicago	IL	60655

Figure B

In the normalized data structures shown here, Figure B contains customer number, name, address, city, state, Zip Code where customer number is the key; Figure C contains customer number and policy number where customer number is the key; Figure D contains policy number, policy type, billing date, billing amount and where policy number is the key; and Figure E contains city and policy type and sales code where a composite key city/type is the key. In Figure E, since the salesman is functionally dependent on policy type in each city, a composite key is used.

CUSTOMER NUMBER	POLICY NUMBER
100	28755
100	14590
100	29800
200	12532

Figure C

POLICY NUMBER	TYPE	BILL DATE	AMOUNT
28755	Auto	2/30/84	534.00
14590	Fire	5/20/84	250.00
29800	Hlth	4/20/84	197.00

Figure D

CITY	TYPE	SALES CODE
Buffalo	Fire	24
Buffalo	Hlth	23
Buffalo	Life	22
Buffalo	Auto	21
Chicago	Fire	14

Figure E

DATA

from page 37

stores the data in clusters of related values. Each of these clusters is identified or accessed by means of a key. The key value is used to locate all other related data.

Practiced, maintained

Normalizing data does not mean that information processing throughout the data center has to be shut down to accommodate some exotic transformation process. Like a diet, it should be practiced and maintained for maximum effectiveness.

The steps involved in achieving normalized data are defined as levels or "normal forms." They are representations of the logical progressions required to reorganize the data. However, data does not have to proceed in a step-by-step order. It can be directly transformed from an unnormalized state to a normalized state. The third normal form is a tremendous benefit. It is more manageable, easier to access and more meaningful for users.

The most important rule of normalization is that every field (domain/column) within a record (tuple/row) is either part of the key or provides information about the key and only the key.

The unnormalized file in Figure A contains a string of related information. In conventional file structures, data was organized in long strings associated with specific applications. There was little thought of multiple uses of each piece of data.

Using this unnormalized file, the system would have to transfer each record in its entirety into main storage to process it, a very I/O-intensive procedure. Every application that requires a single component of the record must process the complete record.

To normalize the data, four separate files should be created (see charts).

Using normalized data, access of information is more efficient. Only the necessary information, related in significantly smaller blocks, is transferred, and the I/O rate is substantially decreased.

Normalized data model

The guidelines to follow to reach this normalized data model are:

- ■ Decompose the data into its simplest form.
- ■ Natural values in the fields can be different, but they must be the same type, such as fixed length.
- ■ Only include logically related data within a single file.
- ■ Use key data fields to identify non-key data fields.
- ■ Be certain that all data within a file points to the key.
- ■ Each field must provide only a single-valued fact about the key.
- ■ Be certain that data fields are functionally dependent only on the key.

Toscano is a systems programmer specializing in CA-Universe, a relational DBMS, at Computer Associates International, Inc.

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Micro-to-mainframe:

Before you settle for
solution, ask a few serious

Choosing a micro-to-mainframe communications system is no game.

If you make the wrong choice, the consequences can be very expensive.

So before you toy around with "easy" solutions, do yourself a favor and ask some serious questions.

You might want to start with these:

Will this product support full IBM Terminal Emulation?

Make sure the system you choose offers *full* protocol emulation. It should be able to emulate remote batch and interactive IBM terminals and terminal systems.

Does the company offer a variety of products to solve my problem?

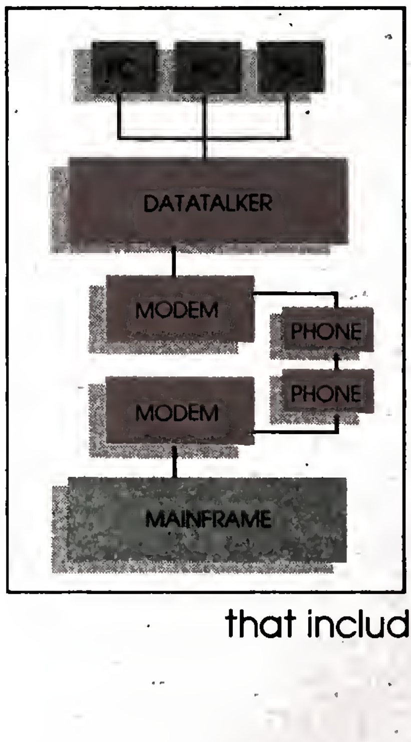
The manufacturer you select should be able to handle *any* operating environment. You should have your choice of stand-alone front-end processors, IBM PC or XT boards, or an OEM board. And make sure the products will run on the most popular operating systems, including CP/M, MS-DOS and UNIX.

Can I get fast answers to my questions?

Insist on toll-free access to qualified service personnel before and *after* the sale. A Product Support Group should be available during **your** normal business day.

What if I need a quick analysis of a problem?

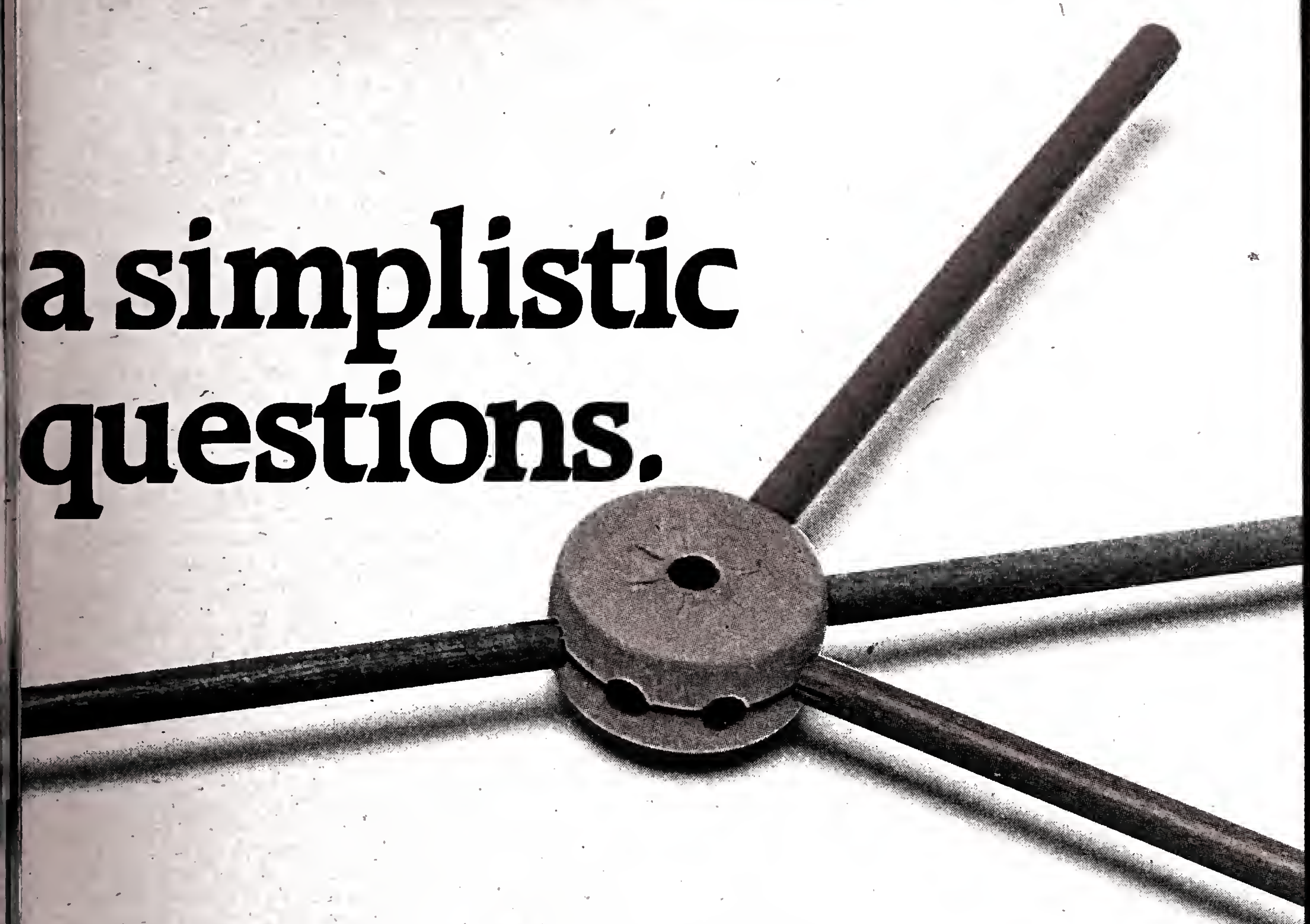
If you run into a problem, you shouldn't have to sit through a lengthy question-and-answer session over the phone. Ask if the manufacturer has a Communications Test Center that allows for product testing over public phone lines. And find out if the product has internal diagnostics that point out problem areas right on the screen.



Suppose something goes wrong with the unit?

Be sure the company offers a service plan that includes a 30 day money-back guarantee and a 12 month warranty that includes a free replacement unit.

a simplistic questions.



What about future product development?

It's not enough for a company to solve your communications problems today. Ask about their commitment to R&D. Are they working on products you're going to need soon? If not, you might want to consider someone who is.

Who am I dealing with anyway?

In a market as volatile as this one, you need some reassurance that the people you buy from will be around to back up their products. Ask how long they've been in business. The longer, the better.

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There are lots of micro-to-mainframe solutions with lots of price tags. But here's a point of reference for you:

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SYSTEMS SOFTWARE

SOFTSYSTEMS, INC.
Security system

Softsystems, Inc. has announced its on-line security system for IBM CICS terminals and operators.

The system controls CICS access by operator and individual terminal, according to the vendor. For example, a CICS terminal in a payroll department cannot be accessed by a CICS operator in another department.

The security system consists of six modules: security manager, operator security, terminal security, conversion, initialization and terminal session module.

The system runs on CICS/VS Releases 1.4, 1.4.1 and 1.5. A one-time installation charge of $1,200 includes an installation tape, installation and system guide, security administration guide and one year of maintenance. The annual maintenance fee is $120.

Softsystems, 311 Mallick Tower, One Summit Ave., Fort Worth, Texas 76102.

MICHAELS, ROSS & COLE LTD.
MRC-Dictionary Release 2.0

Michaels, Ross and Cole Ltd. has announced an enhanced version of its MRC-Dictionary, a data dictionary designed to allow nontechnical users to employ relational data base management capabilities on the IBM System/38.

MRC-Dictionary Release 2.0 reportedly helps to drive other MRC-Query series modules, including MRC-Maintainer. The release is said to offer additional and faster editing capabilities as an adjunct to the System/38 data description specifications.

The dictionary module is priced at $1,140.

Michaels, Ross & Cole, Suite 501, 1301 W. 22nd St., Oak Brook, Ill. 60521.

PRODUCTIVITY AIDS

DATAMETRICS SYSTEM CORP.
Torch/PMS

Datametrics System Corp. has announced Torch/PMS, a performance management system for Sperry Corp. 1100 computers.

Torch/PMS helps identify and correct performance bottlenecks in early stages, the vendor claimed. It reportedly highlights work load and utilization trends for capacity planning and model building and is useful when collecting data needed for new equipment justification. More than 100 scatter plot diagrams are included with the package, the vendor said.

Installation and one year of software maintenance support are included in the initial lease of Torch/PMS, which is priced at $22,500.

The package comes with documentation, a one-year warranty, one day of on-site training, a plot interpretation handbook and one performance analysis study of the customer site.

Continued maintenance and support is available for $2,000 per year, beginning in the second year.

Datametrics System, Suite 201, 9940 Main St., Fairfax, Va. 22031.

IVAN SOFTWARE, INC.
Ivan-Lib/Ivan-Edit Release 3

Ivan Software, Inc. has announced Release 3 of its Ivan-Lib/Ivan-Edit software, designed to reduce program development time and increase programmer productivity.

Release 3 features Interactive Ivan Command Language and interactive utility capability for users of NRC Corp.'s VRX operating system.

The product reportedly allows the programmer to set up an unlimited number of text editing commands in a procedure for subsequent execution. Utilities, either user-written or vendor-supplied, can be set up in an interactive command procedure for execution in seconds.

Prices start at $5,000.

Ivan Software, 120 N. Keowee St., Dayton, Ohio 45402.

Continued on page 46

ADA from page 37

ed Ada compiler. That is no small task, as the company claimed 50 man-years of development went into the root compiler.

Hardware makers and systems developers can contact Alsys now to acquire Alsykit. The full compiler for the two microprocessors, called Alsycomp, will not be available until the end of the year.

Also on the drawing boards at Alsys is a set of reusable Ada code that can save programmers the hassle of writing their own canned routines. Alsypac is a step toward the "software factory" concept for which Ada has been called the ideal language. Companies will be able to buy the routines they need and store them in a library for use in Ada programs. The routines will become available after the compiler is validated late this spring, Patrick said.

Alsys is betting its bankroll on the possibility that Ada will become one of the dominant programming languages of the 1980s and 1990s. Ada has inspired much controversy since development was undertaken in 1975. Critics say that it is too complex and that the learning curve is too high for Ada to replace Cobol. They also question the wisdom of spending the money to scrap millions of perfectly good business programs around the country in order to achieve the as-yet-unconfirmed benefits of Ada.

However, Ada proponents point to the fact that the language's modularity makes it well-suited for reusability, a factor that becomes more important as application backlogs grow. They also say that Ada's standardization eliminates the problem of maintaining old applications written in obscure languages and eases the burden of training new programmers in the quirks of a particular machine's language implementation.

Softech, Inc. predicted that the Ada market will reach nearly $750 million by 1986. Patrick noted that as many as 300 military projects could be programmed in Ada by that time. Alsys President Roy A. Finney added that, despite the controversy, several dozen books have already been published on Ada.

Alsys and others said the reason so few programmers are using Ada is that so few compilers are available. For that reason, companies like Alsys will be worth watching in the future. "It's such a large market that it's very difficult to quantify," Patrick said.

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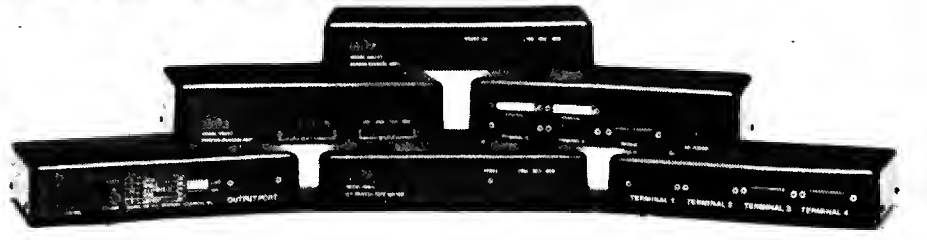

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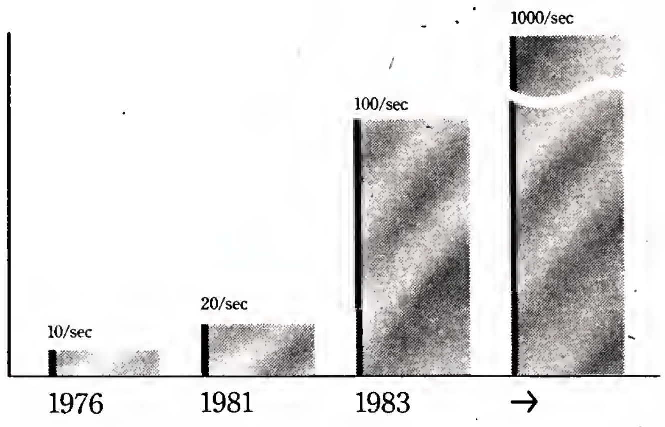
To help memory keep pace with that kind of processing, TXP pulls 64 bits on each memory access.



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The TXP system also features parallel data paths. Manipulating 32 bits of information in a single cycle, two 16-bit operations in the same cycle.

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Cache memory pays off in faster response times.

Cache memory is a high-speed data storage area between the processor and main memory. It lets the processor store more frequently used information closer. So it can get to it faster.

And our tests have shown that the TXP cache memory has a 98% "hit rate." Which means the requested data is virtually always nearby for fast access.

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Most computer systems have very limited expandability. So if a company outgrows its computer's capacity, it usually means starting again from scratch.

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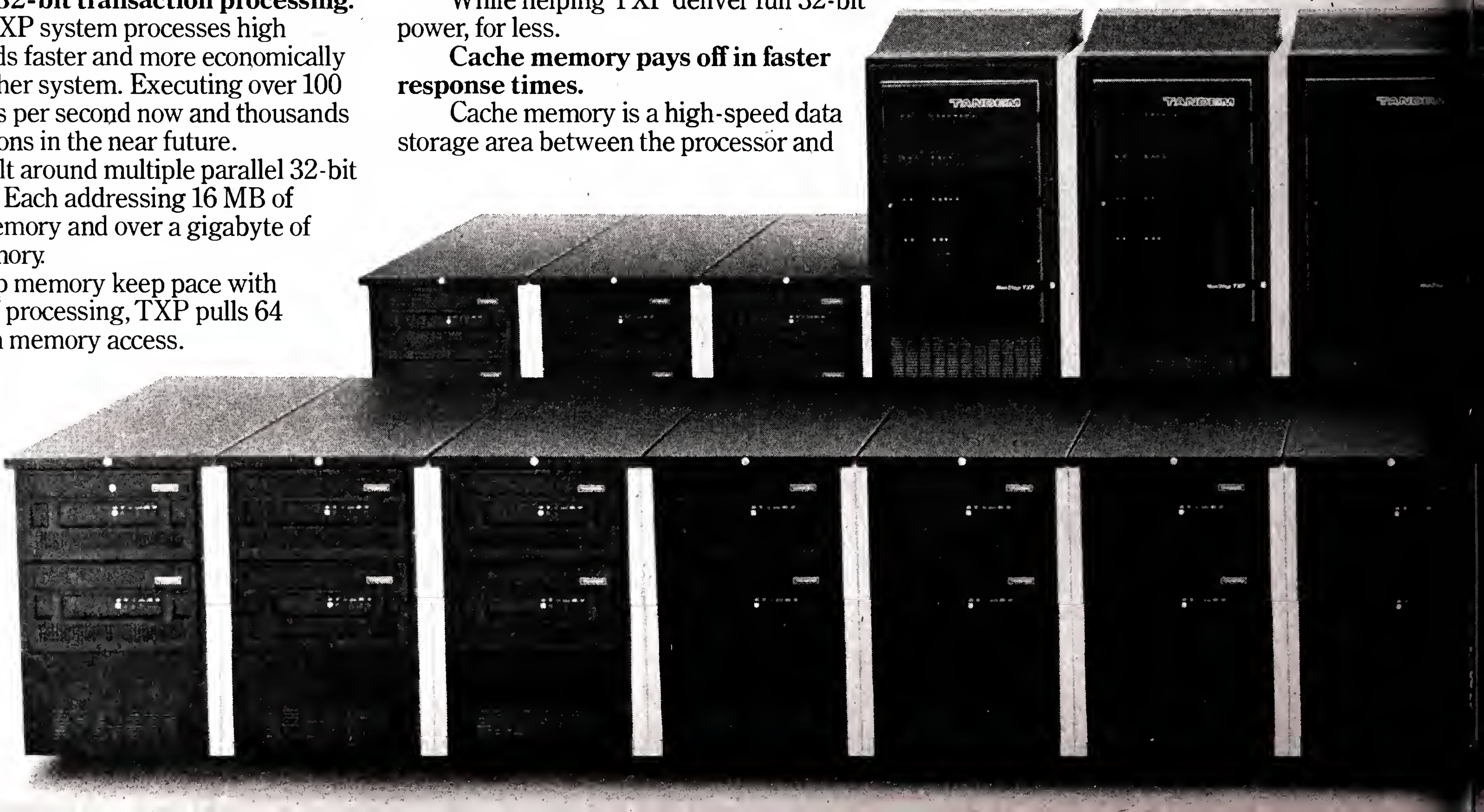

XP

computer in business today.

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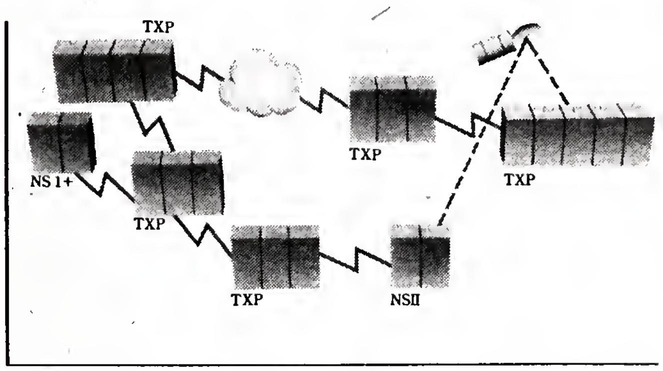

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Expandability our competition wishes they could disband.

NonStop™ system compatibility from the people who started it all.

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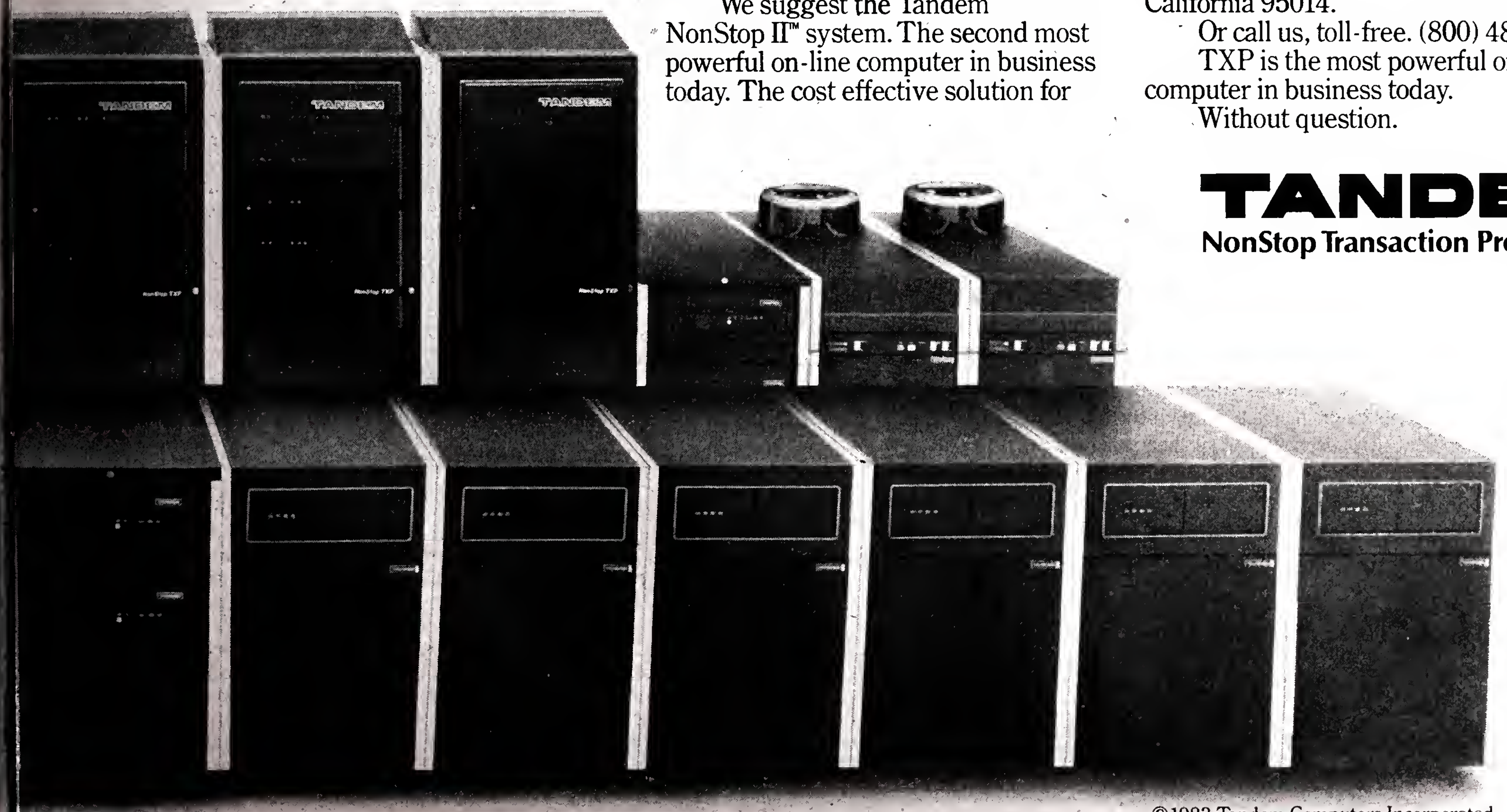

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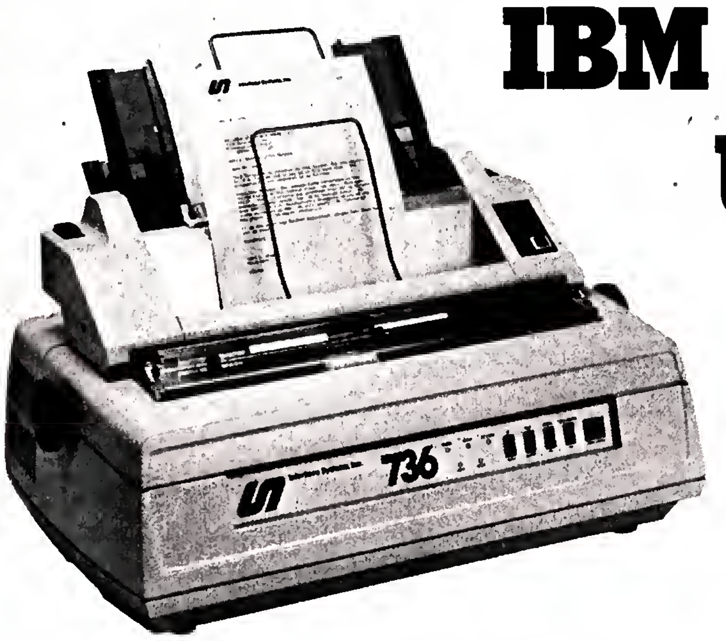

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SOFTWARE & SERVICES

Continued from page 42

APPLICATION PACKAGES

DECISION SYSTEMS
Worksheet

Decision Systems, a division of Interactive Data Corp., has announced Worksheet, said to be a mainframe reporting and data management system with built-in links to most microcomputer spreadsheet packages.

In addition to its mainframe reporting and data management capabilities, Worksheet enables users to transfer user-defined computations and formats from mainframe to micro with simple key commands, a spokesman said. The package also has the capability to transfer the substance of a work sheet as well as its numerical data.

The package was designed to work with the IBM Personal Computer and mainframes utilizing IBM's VM/CMS operating system. It reportedly operates in conjunction with Xsim, Interactive Data's applications software system. A permanent license for Worksheet costs between $20,000 and $30,000.

Decision Systems, 1033 Massachusetts Ave., Cambridge, Mass. 02138.

THE MEGA GROUP, INC.
Megafile

The Mega Group, Inc. has announced a filing system with relational data base functions and multiple spreadsheet capability for IBM mainframe users with little or no programming background.

Megafile is designed for systems using IBM 3270-type terminals and for integration with The Mega Group's Megacalc and Megalink software, which provide access to the IBM mainframe's memory.

The product's three-dimensional matrix permits the simultaneous access, manipulation and merging of data from more than 30 individual spreadsheets, according to the company. Data reportedly can be accessed in a variety of ways, including individual cells, a range of cells, a record and an assigned block of cells.

Spreadsheets and data bases created in Megafile can be downloaded to personal computers, including the IBM Personal Computer, Personal Computer XT and PCjr, according to the company.

Megafile is available now for IBM MVS/TSO environments and will be available for IBM VM/CMS environments during the first quarter of 1984.

The price for Megafile is $5,000 on the IBM 30 series and $4,000 for the IBM 4300 series.

The Mega Group, 2091 Business Center Drive, Irvine, Calif. 92715.

DATA BASE MANAGEMENT SYSTEMS

TOMINY, INC.
Data Base Plus

Tominy, Inc. has announced that its Data Base Plus application development system is now available for use with the IBM System/36.

According to the vendor, Data Base Plus is a family of software development tools, including a data base management system (DBMS) and a high-level programming language, that reportedly allows users to develop business application systems. With component modules, users define logical file structures, establish interrelationships between files, automatically store and retrieve data, access standard screen and print formats and inquire against the data base for reporting purposes.

The components of Data Base Plus are the DBMS, screen handler, print handler, utilities, query/report writer and the Data Base Plus Programming Language. In addition to the System/36, the components may be run with the IBM Personal Computer, System/34, Series/1 and the 4300, 30 series and 370 mainframes.

The vendor said that applications programs can be moved from one hardware system to another without code changes or program modification. Data Base Plus for the IBM System/36 is compatible with the IBM's SSP operating system and is priced at $19,500 for a one-time development system and an additional $5,000 for the Data Base Plus Programming Language.

Tominy, 4221 Malsbary Road, Cincinnati, Ohio 45242.

COMPUTER RESOURCES, INC.
Application Builder

Computer Resources, Inc. (CRI) has introduced Application Builder, an enhancement to its Relate/3000 relational data base management system for Hewlett-Packard Co. HP 3000 computers.

Builder is a fourth-generation system that permits screen-based applications to be developed quickly, according to the vendor. Builder applications are developed using a standard screen editor that simplifies development and testing. Screen definitions and Builder commands are placed in a single file.

A debugging facility is included to assist the application developer in isolating and correcting problems, reducing debugging and maintenance time.

A built-in testing capability can automatically test files for the user.

Builder directly interfaces with Relate's graphics system and report writer, a spokesman said. It also supports the use of function keys and can call subroutines.

Builder is available for $9,950; Relate for $18,500. Lease plans are available.

CRI, 5333 Betsy Ross Drive, Santa Clara, Calif. 95054.

COMPUTER ASSOCIATES INTERNATIONAL, INC.
Normalization: Guidelines for Practical Data Base Design

Computer Associates International, Inc. has announced a video training course intended to help data base users understand the normalization process of organizing a data base.

"Normalization: Guidelines for Practical Data Base Design," reportedly provides a brief historical perspective of data base management and a step-by-step tutorial approach to normalization. It is designed to help the data center understand the benefits of normalization and to provide the ability to design and manage

Continued on page 50

Introducing MARK V™ for CICS users: a *unique,* 4th generation non-procedural application development system that saves you time and money at every stage of your application life cycle. See it at a free seminar near you!

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CW-AI

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For years, Digital's VT100 terminal has been the CRT to choose if you want the most out of your computer. It has become the industry standard for reliability and ease of use. Not to mention the largest-selling ASCII terminal in the world.

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SOFTWARE & SERVICES

Continued from page 46

data more effectively, a spokesman said.

The video tape and accompanying course book are priced at $129.

Computer Associates International, 70 Jericho Tnpk., Jericho, N.Y. 11753.

ON-LINE DATA BASES

DATA RESOURCES, INC.; DATAPRO RESEARCH CORP.
Datapro/Online

Data Resources, Inc. and Datapro Research Corp. have announced a data base service called Datapro/Online, which contains information about computers, software and the companies that manufacture them.

According to a spokesman, the service provides subscribers with access to information drawn from Datapro's directories of product and vendor information.

The software data base, which is updated monthly, contains reports on software applications, products and companies. The microcomputer data base includes information such as system price, disk capacity, peripherals and communications capabilities. A data base of vendor profiles contains information on computer-related vendors referenced by city, state, product line and sales volume. The data base of on-line services allows users to locate vendors of information, such as stock market prices, newspaper articles and interest rates.

The annual subscription fee for Datapro/Online per company is $250, with an additional $120/connect hour charge.

Data Resources, 24 Hartwell Ave., Lexington, Mass. 02173.

REMOTE COMPUTING SERVICES

INFORMATICS GENERAL CORP.
Informail

Informatics General Corp. has announced Informail, an electronic mail application, for users of its time-sharing service.

Informail's security procedure allows each user to read only mail sent to his mailbox. All files are automatically duplicated to prevent accidental loss of a message, according to the vendor. The mail system includes a step-by-step list of options and on-line help screens for an inexperienced user, the vendor said.

Informail costs 5 cents per message and $25 per hour for users who meet the standard monthly minimum charge of $300.

Informatics General, 21031 Ventura Blvd., Woodland Hills, Calif. 91364.

METHODOLOGIES

QUANTITATIVE SOFTWARE MANAGEMENT, INC.
Slim

Quantitative Software Management, Inc. has announced the Slim service, a software development bid-evaluation service for software development managers.

Quantitative Software Management personnel utilize the Slim technique to evaluate an organization's key criteria for cost, man-hours and time in software development projects. On a consulting basis, the Slim service is priced at $75,000, based on three software development bidders.

The Slim software can also be obtained on annual license for $25,000. It is compatible with the Hewlett-Packard Co. HP 80 series desktop computers, the HP 9800 series desktop computers and the Digital Equipment Corp. Decsystem 2060 mainframe.

Quantitative Software Management, 1057 Waverly Way, McLean, Va. 22101.

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IBM to ASCII

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Series II Plus

We've added a little polish to our Series II family of protocol converters. The result is the Series II *Plus*, a complete line of SNA/SDLC and Bisync protocol converters. If you've become accustomed to the performance of KMW 3270, 3770, HASP and 2780/3780 protocol converters, you're going to appreciate the *Plus*.

Pluses

+ Diagnostics

The KMW Series II *Plus* provides three levels of extensive on-board diagnostics for troubleshooting without ever opening the unit. Level one testing includes PROM and RAM tests as well as confidence tests of most system components. Level two testing is a much more comprehensive test of system components including I/O circuits. Level three is controlled via the system console and includes the ability to move data files to each of the supported peripheral devices.

+ Programmability

Host session and asynchronous device parameters are programmable via the setup mode on the system console. Programmable host session parameters include:

- log on information
- buffer size
- device address
- data rate

Programmable asynchronous device parameters include:

- device type
- input mode
- output mode
- character framing
- data flow control
- data rate

Setup data can be permanently held in EEPROM even when the Series II *Plus* is powered off.

+ Speed

Featuring a Z80A processor, the Series II *Plus* is capable of data rates up to 19.2 Kbps or, with optional Z80B processor and DMA, up to 56 Kbps as well as concurrent operation of up to 8 input/output devices at equivalent rates!

+ Code Compliance

The Series II *Plus* converters meet the FCC emissions requirements and are designed to satisfy those requirements when included in subsystems. The Series II *Plus* is also UL and CSA listed.

+ Fluency

The Series II *Plus* provides fluent communications in IBM SNA and Bisync protocols including 3770, 3270, HASP and 2780/3780. All Series II *Plus* converters support a multitude of input and output devices and are available with up to 8 ports (3 in 2780/3780 converters). You can count on the Series II *Plus* for fluent IBM to ASCII communications.

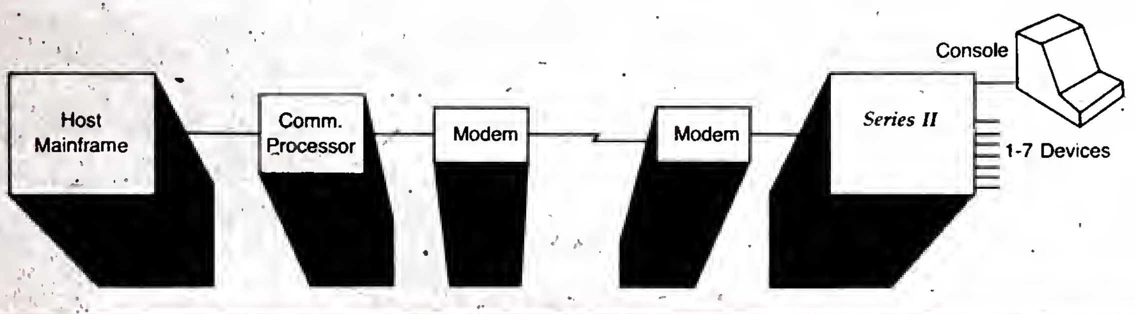
+ Hardware Design

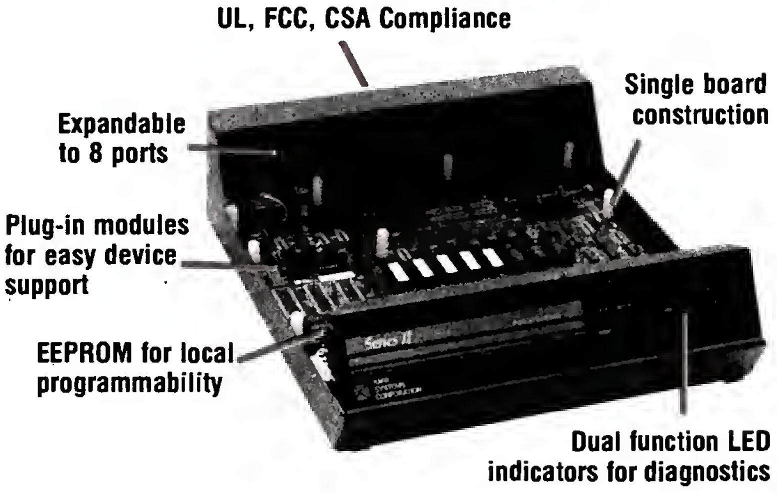
Another Series II *Plus* advantage is the efficient hardware design of the unit. The sleek exterior lines give way to a plug-in modular interior which provides for maximum flexibility, a high degree of reliability and ease of maintenance. KMW's unique hardware design allows for a series of plug-in modules to provide device interfaces. Standard interface modules include Data Products 8 bit Parallel Printer interfaces, Documation Parallel Card Reader and RS-232 Serial General Purpose interfaces.

The reliability of the Series II *Plus* design is exemplified by an impressive mean time between failure of over 13,000 hours. That's a real plus.

With a mean time to repair of only 30 minutes, down time is always at a minimum.

The Series II *Plus* is engineered for performance and the proof is in the package.




UL, FCC, CSA Compliance
Single board construction
Expandable to 8 ports
Plug-in modules for easy device support
EEPROM for local programmability
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A Special *Plus*

The Series II *Plus* is available in synchronous-to-synchronous configurations including 3770 to 2780/3780 or HASP to 2780/3780. If your applications require something special, check with KMW.

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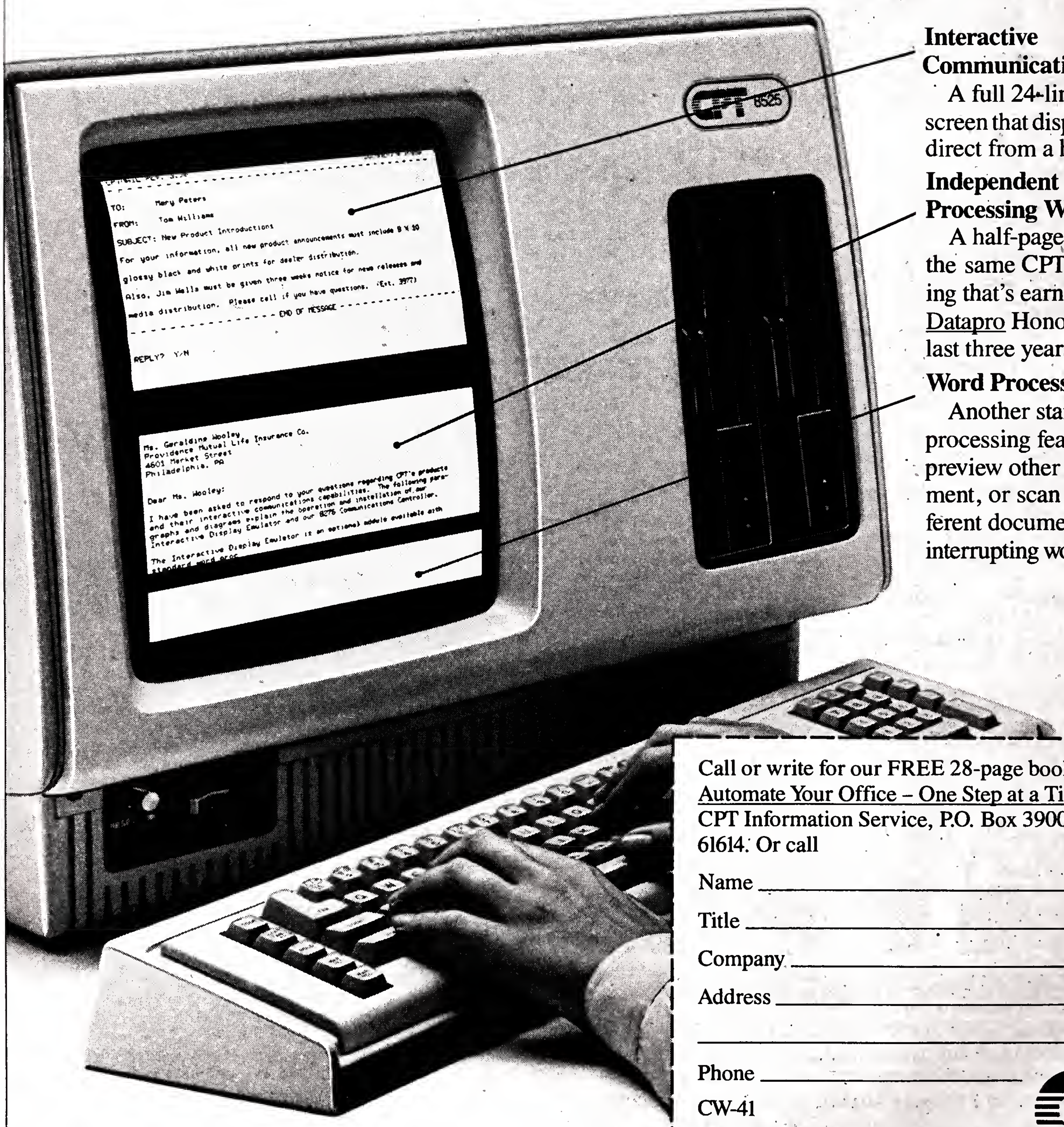

```
TO:      Mary Peters
FROM:    Tom Williams
SUBJECT: New Product Introductions
For your information, all new product announcements must include 8 X 10
glossy black and white prints for dealer distribution.
Also, Jim Wells must be given three weeks notice for news releases and
media distribution.  Please call if you have questions.  (Ext. 3977)
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REPLY?  Y/N
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COMMUNICATIONS

Hughes proposes satellite system

WASHINGTON WIRE

PHIL HIRSCH

A satellite communications system that will enable users to communicate at 1.5M bit/sec through low-cost, small-diameter dish antennas was proposed by Hughes Aircraft Co. in a thick prospectus submitted to the Federal Communications Commission last month here in the nation's capital.

The company wants permission to launch two satellites which would operate in the 20- to 30-GHz (Ka) band.

This is a good deal higher than all previously announced commercial satellites that operate at either 4 to 6 GHz (C band) or 12 to 14 GHz (Ku band).

Satellite channels

Each of the new Hughes Galaxy satellites would provide a total of 3,072 one-way 1.5M bit/sec (T-1) channels through 32 transponders. The earth stations would employ a two-meter antenna and a 1W solid-state transmitter. Hughes expects the total cost of the ground terminal to be less than $50,000.

The system will support private and shared-use voice, video and data networks, the company added. Hughes intends to sell the transponders outright or lease them, although it may offer other terms.

Teleconferencing, high-speed document transfer, remote printing and other data transfer services will be the principal applications of the new system, Hughes said.

Growing demand

"A recent study indicates that the demand for teleconferencing will grow at an annual rate of 59%, reaching annual sales of $430 million by 1987." Hughes "anticipates that the advent of low-cost customer terminals and ancillary equipment made possible by the

See HUGHES page 54

Campus net passes test

Runs first year without major gliche

By Robert Batt
CW West Coast Bureau

SAN DIEGO — One of the country's first local-area networks linking an entire university campus has been up and running here for almost a year with no major hiccups.

Before San Diego State University took the plunge with a local-area network, it considered a number of options that would allow it to expand communications facilities for its 33,000 students. Some of those options, according to Robert Swanson, manager of technical support at the university's computer center, were quite exotic. They included:

- ■ A citizens band radio facility.
- ■ An on-campus microwave system.
- ■ A communications system based on optical-fiber technology.
- ■ Twisted-pair cable techniques that would require going point-to-point with all the terminals in the network.

"When you want your machines to have the ability to talk with one another, it is essential to have everything on a single wire, so in the end, we chose a coaxial cable approach," Swanson contended. The advantage to this approach was that the essential technology was available off the shelf.

'Technology was simple'

"The technology was simple, and the bandwidth for communications amazed us in its capabilities and range of capacity compared with the other devices we had looked at," Swanson said.

The university chose Sytek, Inc., a San Jose, Calif.-based manufacturer of broadband computer and telecommunications equipment to supply the interface to the network.

Xerox Corp.'s Ethernet was also considered, "but we did not want to have point-to-point baseband technology, which was all that was available at the time," Swan-

See NET page 54

DEC introduces KCT32 for VAX

MAYNARD, Mass. — Digital Equipment Corp. has announced the introduction of a board-level, front-end communications processor, the KCT32, that is reportedly designed for networking and custom communications applications on DEC VAX minicomputers.

Usable in most computer-to-computer and computer-to-terminal environments, the KCT32 has supporting software that allows it to run under the VAX/VMS operating system, according to a spokesman for the vendor.

The processor is said to use the DEC T11 chip and is targeted toward the banking, insurance and telecommunications markets.

The KTC32 has 56K bytes of programmable memory and implements DEC PDP-11 instructions, according to a vendor spokesman.

Special software can be developed on a VAX systems by using the VAX/VMS software support tools, according to the spokesman.

Single boards

The processor employs a single hex-width board and can be initialized by line, for either synchronous or asynchronous data transmission and reception, the DEC spokesman said.

It supports two lines at 64K bit/sec per line or a single line at 130K bit/sec, in full duplex mode, the DEC spokesman said.

The processor is priced from $6,900 to $7,400 with deliveries in the spring, according to DEC.

Digital Equipment Corp., Maynard, Ma. 01754.

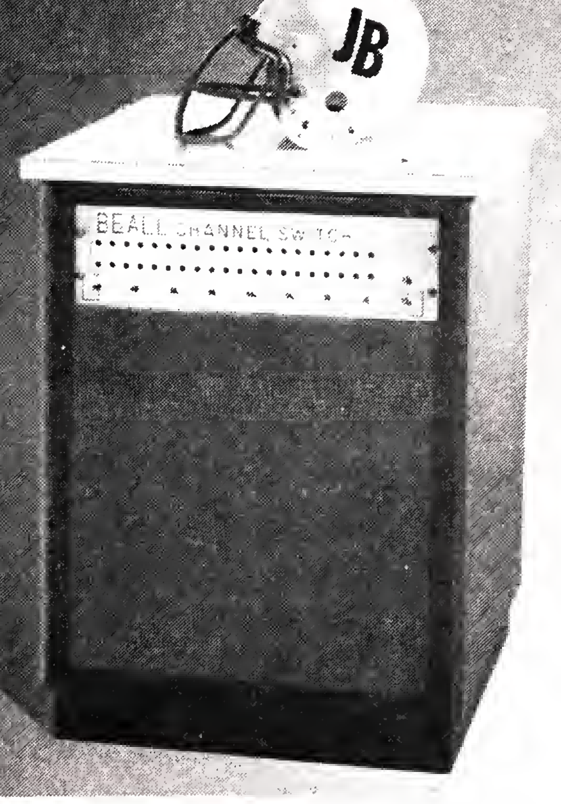
Software allows HP 3000 to receive data from PBX/57

INSIDE

■ Remote terminals will act as local terminals over packet-switched networks for users of a front-end processor/**56**

■ Asynchronous Ascii CRT terminals or IBM Personal Computers can be attached to IBM 3274 and 3276 controllers as if they were IBM 3278 displays by using a protocol converter from Local Data Co./**54**

■ Local network supporting multiple operating systems now available/**57**



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2 It's easier to operate. Simpler controls reduce chances of costly operator mistakes.

3 It's simpler to service. Self-diagnostic equipment is built in. Spare parts stocked on site.

We make five basic models to provide up to eight switchable interfaces each of which can be logically connected to as many as eight CPUs.

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John Beall & Company, Inc.

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HUGHES

from page 53

[new satellite system] will accelerate industry and government use of teleconferencing," a company spokesman said.

And since the 1.5M bit/sec channels to be provided by the new Galaxy satellites will be subdividable, the system will also provide "customized switched data circuits for private networks," according to a Hughes spokesman.

'Tremendous benefits'

Hughes added that the new system would "provide tremendous benefits for firms whose businesses involve information retrieval and manipulation."

Hughes said that demand for satellite communication channels will outgrow Ku and C band capacity by 1990.

It cited a recent Western Union Corp. report to the FCC which concluded that "available C and Ku band transponders will fall short of needed capacity by up to 315 transponders in 1990 and up to 1505 transponders in 2000."

The first of the two new satellites is scheduled to be launched in the fourth quarter of 1988, and the second one will be launched a year later. Each will serve the nation's 16 largest cities.

Time of experimentation

The Hughes application comes at a time when Japan and several European countries are experimenting with Ka band satellites.

If the new Galaxy system is approved, it probably will be the first one developed by a U.S. company for commercial service.

Hughes Communications Galaxy, Inc., a subsidiary of the aerospace firm, plans to operate the two new Ka band satellites.

Formerly known as Hughes Communications, Inc., the subsidiary already operates two communications satellites and is making plans for the future to launch two more in the lower bands.

NET

from page 53

son noted.

According to the technical manager, the choice of broadband turned out to be a very smart move because it enabled the university technicians to use a wide range of frequencies to make any of its boxes operate.

"In other words, we were not forced to dedicate any particular frequency to a particular set of machines, with the result that any student or teacher can sit at one terminal and talk to any other machine in the network," Swanson maintained.

From the start, the project went like clockwork. Just three months after the initial detailed design was finished, the first transmission on the network took place. Within six months, Swanson said, the network was totally operational.

Over the last year, the original network, containing 9,000 feet of cable, 200 interfaces to computer ports and terminals and three major mainframe systems, has been expanded twice, so that today the system stands at 16,000 feet of cable, over 300 ports or terminals and 11 major computer systems.

> *'The local-area network has completely altered our perspective of computing.'* — Robert Swanson, technical support manager, San Diego State University.

"Our computer simulation tells us that up to 32,500 terminals and computers can be placed on the network," Swanson said.

The present network contains a Control Data Corp. Cyber 170/750 number cruncher with 12 disk drives, five tape drives and two-line printers and one Digital Equipment Corp. VAX-11/780, two VAX-11/750s, one PDP-11/45, five PDP-11/44s and one PDP-11/34.

The Cyber machine communicates with the PDP-11/45 time-sharing system and the PDP-11/44s via communications boards.

Also on the network are 170 Decmate word processors, 90 CRT terminals and several Apple Computer, Inc. Apple II micros, one of which is used as a network manager and one that serves as a backup to the PDP-11/34.

Applications on the network include a transaction-oriented library circulation system; an administrative data acquisition system, used mostly for accounting data; a financial accounting system and a system for keeping all student records. All the instructional computer classes and research performed on campus is monitored on the network.

"The local-area network has completely altered our perspective of computing and allowed us to pursue the distributed processing environment that the campus requires," Swanson said.

Future additions to the network currently under investigation include a campus data security system using encryption techniques; an electronic mail facility that will be the university's first entry into office automation; and a digital private branch exchange system.

In addition, the university will soon be adding off-campus areas to the network, namely off-site student dormitories and a new research center located about a mile away from the main site.

Protocol Converters

Local Data Co.
Protocol converter enhancement

Local Data Co. has announced an enhancement to its protocol converter that allows an asynchronous Ascii CRT terminal or IBM Personal Computer to attach to IBM 3274 and 3276 controllers in emulation of the IBM 3278 Model 2 display station.

The Interlynx/3278 is a standalone controller that connects to an IBM Type A coaxial cable and converts the coaxial interface to an RS-232C Ascii interface, a spokesman said.

According to the vendor, the Interlynx/3278 protocol converter performs multiple interface and protocol conversion functions necessary for driving asynchronous minis and microcomputers; CRT word processing; port selection; and modem and hardcopy terminal communications into the coaxial ports.

Hardware and software changes are not necessary with the Interlynx/3278 protocol converter, according to the vendor.

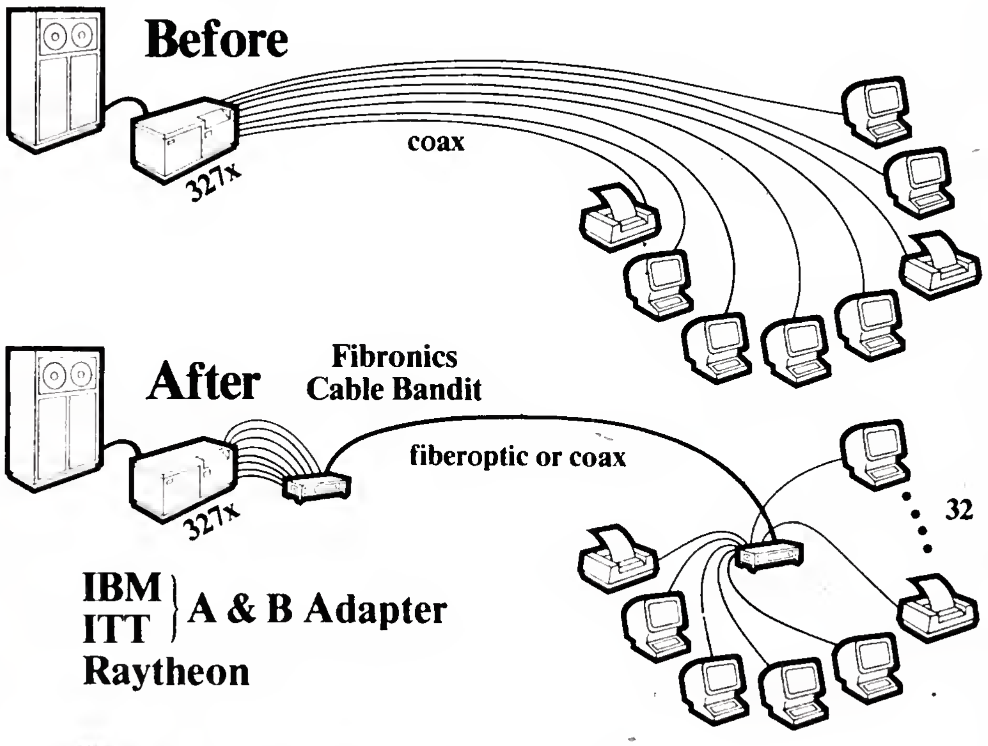
An optional Personal Computer file-transfer package is available. Support for all Personal Computer compatibles, the Xerox Corp. 860 and the IBM Displaywriter is also available.

The price of the Interlynx/3278 is $1,395.

Local Data, Suite 706, 2701 Toledo St., Torrance, Calif. 90503.

See PROTOCOL page 56

IBM® 3270 Users.



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Protocol from page 54

COMMUNICATIONS TECHNOLOGY CORP.
C-9424 RS-232/HP-IL Link

Communications Technology Corp. has announced the release of its C-9424 RS-232/HP-IL Link.

The Cmos C-9424 is compatible with National Semiconductor Corp.'s Cmos Industrial Microcomputer Bus (Cimbus) serial I/O board, with the capability for RS-232C-controlled asynchronous data transfer between a Cimbus Series/800 system and any compatible peripheral.

According to the vendor, it also contains all the circuitry for communications over the Hewlett-Packard Co. Interface Loop (HP-IL). In addition to the two serial communications channels, the C-9424 has provisions for 4K or 8K bytes of read-only memory (ROM), addressable on 4K-byte boundaries. There are 15 possible software-selectable bit/sec rates, ranging from 50 to 19,200.

The C-9424 comes with firmware in a single erasable programmable ROM, which provides an interface driver for the HP-IL, initialization routines and rudimentary debugging tools. The C-9424 is available immediately for $390, and quantity discounts are available.

Communications Technology, 2237 Colby St., Los Angeles, Calif. 90064.

HEWLETT-PACKARD CO.
HP Telex

Hewlett-Packard Co. has announced the HP Telex, a hardware and software package that allows telex messages to be sent from terminals connected to the company's HP 3000 business computer systems.

The product utilizes domestic and international telex networks of major U.S. carriers such as Western Union Corp., ITT World Communications, Inc. and RCA Global Communications, Inc., the vendor said.

Telex messages to be sent using a terminal connected to an HP 3000 may be composed directly on the HP Telex, or they may be composed with any of the HP word processors or other editors currently available on the HP 3000. Incoming messages may be received on any one of several HP printers, according to the vendor.

The system consists of a software package and a telex interface unit connected to the HP 3000. One telex interface can transmit or receive telex messages on the same line, and the software supports as many as eight units and telex lines connected to one HP 3000, the vendor said. The price for the software is $3,500, and the interface unit costs $2,645.

HP, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

COMMUNICATIONS CONTROLLERS

INNOVATIVE ELECTRONICS, INC.
MC-80/600-1

Innovative Electronics, Inc. has announced the MC-80/600-1 communications processor. Emulating an IBM 3274-51C communications controller running configuration support level A, this device converts a Digital Equipment Corp. VT100-compatible terminal into an IBM 3277-1, 3277-2, 3278-1 or 3278-2 terminal communicating with the IBM host using the Ebcdic Binary Synchronous Communications protocol.

The product provides up to 16K bytes of read-only memory, 16K bytes of random-access memory and two serial communications ports. The price for the basic unit is $1,495.

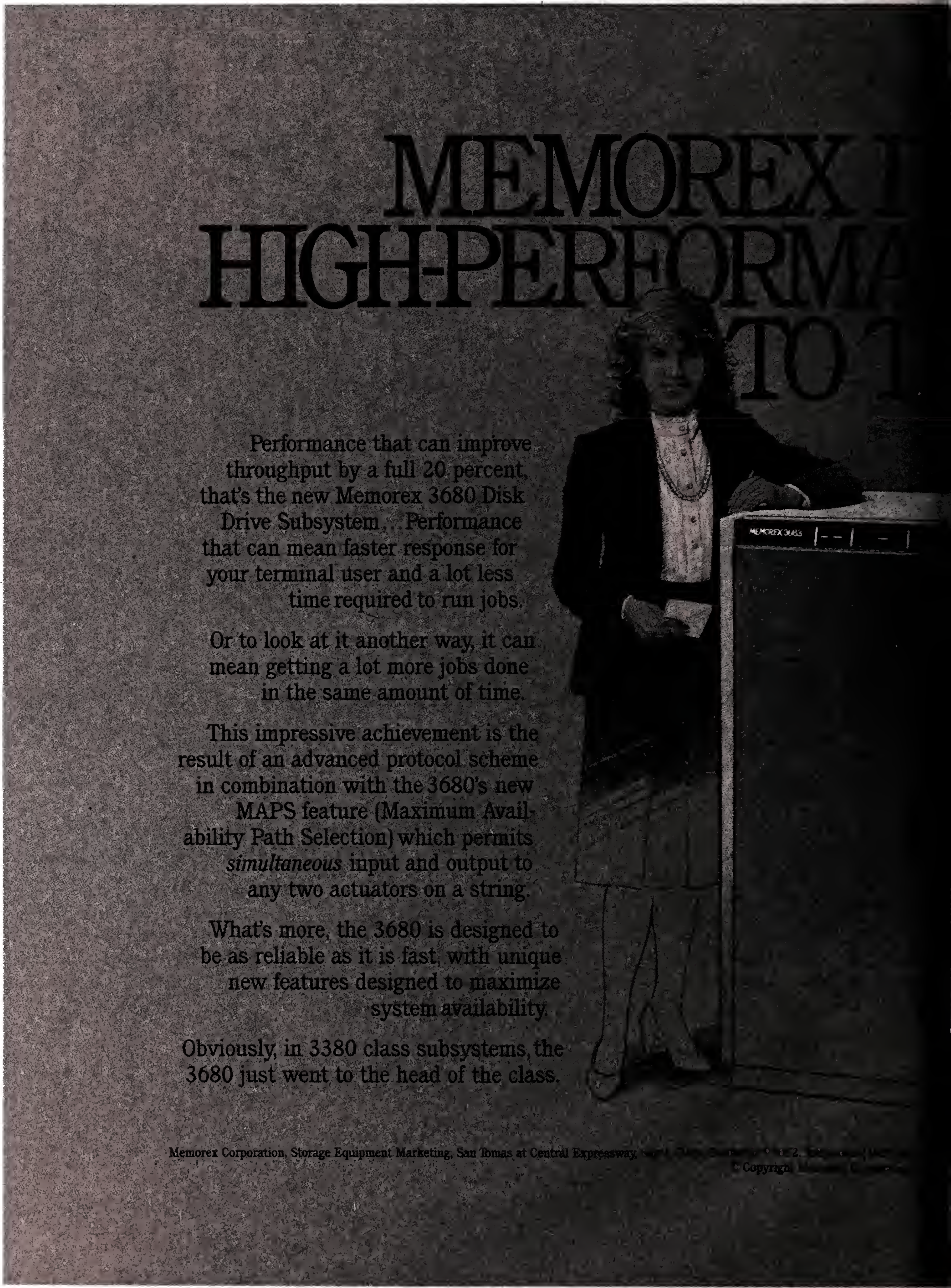
Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

CABLESHARE, INC.
LSI-X.25 Front-End Processor

Cableshare, Inc. has announced X.29 functionality on its LSI-X.25 Front-End Processor, which reportedly allows remote terminals to communicate with host computers over a packet-switched network as if they were local terminals.

The X.29 support is said to provide host applications control over the functions and operational characteristics exhibited by a remote

Continued on page 57



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Performance that can improve throughput by a full 20 percent, that's the new Memorex 3680 Disk Drive Subsystem... Performance that can mean faster response for your terminal user and a lot less time required to run jobs.

Or to look at it another way, it can mean getting a lot more jobs done in the same amount of time.

This impressive achievement is the result of an advanced protocol scheme in combination with the 3680's new MAPS feature (Maximum Availability Path Selection) which permits *simultaneous* input and output to any two actuators on a string.

What's more, the 3680 is designed to be as reliable as it is fast, with unique new features designed to maximize system availability.

Obviously, in 3380 class subsystems, the 3680 just went to the head of the class.

Memorex Corporation, Storage Equipment Marketing, San Tomas at Central Expressway, [illegible]
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Continued from page 56

tics exhibited by a remote X.25 packet assembler/dissembler.

The front-end processor is designed for use on Digital Equipment Corp. PDP-ll and VAX-11 processors. It is said to handle all X.25 protocol internally.

It is supported for use on DEC's RSTS/E, RSX-11M (M-Plus) and VAX/VMS operating systems. The LSI-X.25 Front-End Processor is priced at $13,000.

Cableshare, 20 Enterprise Drive, London, Ont., Canada N6A 4L6.

MULTIPLEXERS/ MODEMS

VISIONARY ELECTRONICS, INC.

Visionary 1200

Visionary Electronics, Inc. has introduced the Visionary 1200, a 1,200 bit/sec intelligent stand-alone modem that contains up to 48K bytes of memory for sending, receiving and storing messages, including telex and TWX.

The unit features automatic logon and automatic data capture and retrieval, as well as an internal clock/calendar and on-board software that allows it to send and receive messages automatically, even if the host computer is turned off. The Visionary 1200 transmits at either 1,200 or 300 bit/sec, has memory expandable to 48K bytes and includes two serial ports.

The Visionary 1200 is composed of a Bell 212A modem and an Intel Corp. 8085 microprocessor, while the unit's Cmos memory features full battery backup of all files. Additional automatic features include autoanswer, autodial, autoredial on busy or no answer and answerback. The price of the Visionary 1200 ranges from $795 to $1,095, depending on memory size.

Visionary Electronics, 141 Parker Ave., San Francisco, Calif. 94118.

COMMUNICATIONS SOFTWARE

THE TYPE AHEAD ENGINE CO.

PBX Engine

The Type Ahead Engine Co. has announced an interface package that reportedly transfers telephone traffic data from digital private branch exchange (PBX) systems to the Hewlett-Packard Co. HP 3000 minicomputer.

The PBX Engine is said to allow HP 3000 users to capture traffic data and use their own software or commercially available packages to analyze it.

The product is available at a price of $1,250.

The Type Ahead Engine Co., 534 Rosal Ave., Oakland, Calif. 94610.

LOCAL-AREA NETWORKS

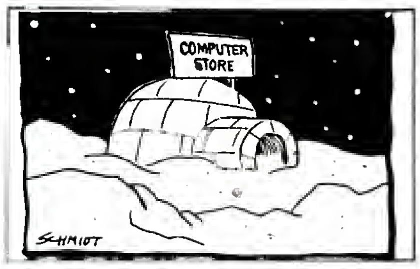
DIGITAL RESEARCH, INC.

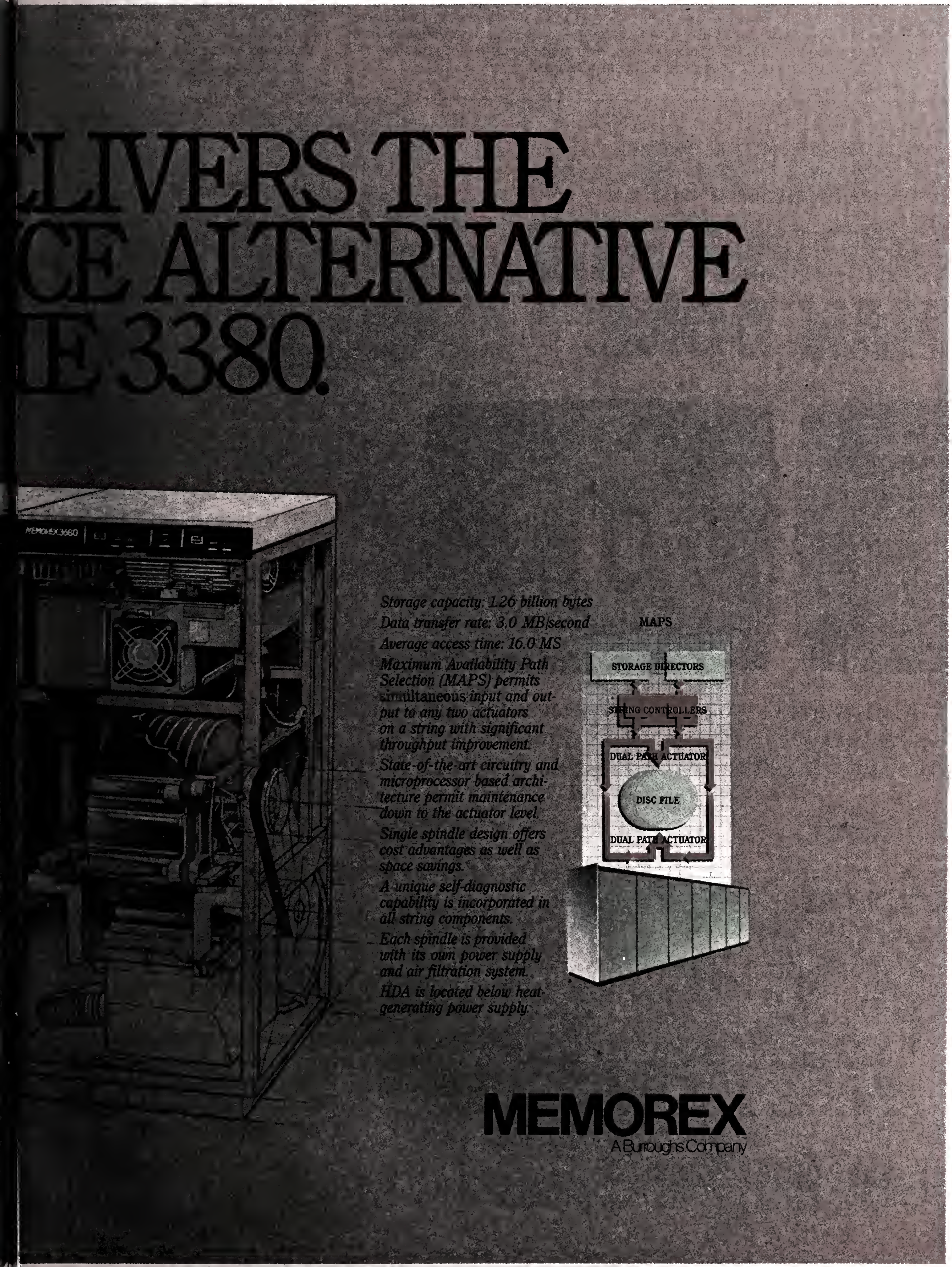
DR Soft/Net package

A software package that can reportedly link microcomputers running its CP/M operating system via any local-area network was announced here by Digital Research, Inc.

Introducing its new DR Soft/Net package, the company claimed the product enables offices to tie together diverse personal computer workstations using local-area networks such as Xerox

Continued on page 58





Storage capacity: 1.26 billion bytes

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Maximum Availability Path Selection (MAPS) permits simultaneous input and output to any two actuators on a string with significant throughput improvement.

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Continued from page 57

Corp.'s Ethernet, Datapoint Corp.'s Arcnet and Corvus Systems, Inc.'s Omninet.

The package is said to interconnect micros running any version of Digital's CP/M, CP/M 86 and Concurrent CP/M operating systems.

Networking features reportedly include file sharing, password protection, as well as record and file locking.

In conjunction with Concurrent CP/M, DR Soft/Net is said to provide a file-server capability at each workstation.

According to the vendor, users are able to share files and transfer information and perform other tasks while running an application.

DR Soft/Net does not require dedicating a separate workstation CPU to supervise networking, Digital claimed, and its multitasking capabilities also support transferring data between local and remote processors via a local network, thereby providing full distributed processing, according to Digital.

The product will be sold for $1,000. Digital Research also announced a new compiler design, which it claimed will increase the transportability of applications software.

The first example of the technology, a compiler for Fortran-77, will be released in January, the company said.

The Fortran-77 compiler, priced at $500, will be the first of five new compilers to use the technology and will run on Concurrent CP/M and CP/M 86 operating systems, a spokesman for Digital said.

According to Digital, it will offer IBM PC-DOS and Microsoft, Inc. MS-DOS capability. Compilers for Pascal, C, PL/I and C Basic programming languages will follow, the vendor added.

Digital Research, 160 Central Ave., Pacific Grove, Calif. 93950.

TEST EQUIPMENT

TELECOMMUNICATIONS TECHNIQUES CORP.

Enhancements

Telecommunications Techniques Corp. (TTC) has added two enhancements — a remote control option and an interface module — to its data error analyzers.

A remote control option that provides access through an RS-232 or IEEE-488 interface has been added to the firm's Fireberd 2000 data error analyzer, according to the vendor.

The remote control option is designed for remote access to a long-term, unattended test application, the vendor said.

The DS1 interface module for Fireberd 1500 and 2000 series analyzers acts as data terminal equipment and exchanges a return-to-zero bipolar data signal, a spokesman for the vendor said.

It operates in terminated or bridging mode and allows the measurement and injection of bit errors and bipolar violations, according to the vendor spokesman.

Adding the remote control option to an existing Fireberd 2000 costs $875; adding the DS1 interface costs $875.

TTC, 444 N. Frederick Ave., Gaithersburg, Md. 20877.

AUXILIARY EQUIPMENT

INTERNATIONAL DATA CORP.

Communications Technology Service

International Data Corp. has announced its Communications Technology Service (CTS) to provide businessmen and government officials with information about technological advances, as well as the divestiture of AT&T.

Key elements of CTS are said to be a semimonthly bulletin reporting on and analyzing developments in the communications field and quarterly research reports covering industry issues, according to a spokesman for the vendor.

The service is available now at a charter rate of $10,000 per year until April 30 and at a rate of $16,000 thereafter.

International Data, Washington Division, Suite 240, 1500 Planning Research Drive, McLean, Va. 22102.

WESTERN TELEMATIC, INC.

DB-1

Western Telematic, Inc. has introduced its DB-1, a data booster that doubles cable transmission distance, according to the vendor.

DB-1 acts as a line conditioner and signal booster for data and handshake signals.

The data booster plugs into a cable transmission line, receives signals, filters noise, improves electrical characteristics and boosts signal strength, the vendor said. The data booster also reportedly retransmits a signal downline.

DB-1 is priced at $95, according to the vendor.

Western Telematic, 2435 S. Anne St., Santa Ana, Calif. 92704.

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Frank Chisholm*

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But suppose when you build a complex, high volume production application with IDMS/R, you desire outstanding performance. Typically, 5% of the data relationships (joins) in any application are accessed 95% of the time. With IDMS/R you can simply change these relationships to predefined joins and benefit from a dramatic boost in performance.

We call it Relational Fastpath. This is what makes IDMS/R a unique relational DBMS, and a perfect system with which to build production applications. In addition, IDMS/R has the most sophisticated back-up and recovery capability of any DBMS, a full integration with personal computers and a complete line of integrated financial and manufacturing applications.

In summary, IDMS/R was designed to satisfy the requirements of the IBM 4300 user who wants to develop both production and end user applications faster and easier.

For further information, attend a Cullinet Seminar. Mail the attached coupon or call the Cullinet Seminar Center at 800-225-9930 (in Massachusetts 617-329-7700).

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*Frank L. Chisholm is Cullinet's Executive Vice President. Frank has worked closely with Cullinet users and prospective users for more than six years. As a key member of Cullinet's management team, Frank has contributed heavily to Cullinet's database product development strategy.

IDMS/R Seminar Cities and Dates

City & State	Date	City & State	Date	City & State	Date	City & State	Date
Allentown, PA	Mar. 1	Des Moines, IA	Feb. 16	New York, NY	Feb. 22	St. Louis, MO	Feb. 8
Atlanta, GA	Feb. 15	Detroit, MI	Feb. 9	Oklahoma City, OK	Feb. 9	Salt Lake City, UT	Feb. 21
Arlington Heights, IL	Feb. 23	Edmonton, AB	Feb. 15	Omaha, NE	Mar. 1	San Diego, CA	Feb. 23
Austin, TX	Feb. 14	Fort Wayne, IN	Mar. 6	Orlando, FL	Feb. 7	San Jose, CA	Feb. 14
Baltimore, MD	Feb. 21	Greenville, SC	Mar. 6	Oshkosh, WI	Feb. 28	Savannah, GA	Feb. 3
Bloomington, IL	Feb. 21	Hartford, CT	Feb. 14	Ottawa, ON	Feb. 1	Seattle, WA	Feb. 7
Boston/Westwood, MA	Feb. 23	Indianapolis, IN	Feb. 21	Ottawa, ON	Feb. 21	Somerset, NJ	Feb. 8
Bowling Green, KY.	Feb. 1	Joliet, IL	Feb. 9	Philadelphia, PA	Feb. 8	South Bend, IN	Feb. 7
Bridgeport/New Haven, CT	Mar. 6	Kansas City, MO	Feb. 22	Pittsburgh, PA	Feb. 29	Springfield, IL	Mar. 5
Burlington, MA	Feb. 9	Lansing, MI	Feb. 1	Portland, ME	Feb. 21	Syracuse, NY	Feb. 14
Charleston, WV	Feb. 29	Los Angeles, CA	Feb. 9	Quebec City, PQ	Feb. 15	Tallahassee, FL	Mar. 1
Charlotte, NC	Feb. 23	Louisville, KY	Feb. 16	Quincy, IL	Feb. 29	Tampa, FL	Feb. 8
Cincinnati, OH	Feb. 7	Memphis, TN	Feb. 23	Richmond, VA	Feb. 8	Toledo, OH	Feb. 24
Cleveland, OH	Feb. 3	Miami, FL	Feb. 16	Roanoke, VA	Jan. 20	Toronto, ON	Feb. 2
Columbus, GA	Feb. 28	Moline, IL	Feb. 3	Rockford, IL	Feb. 14	Worcester, MA	Feb. 16
Denver, CO	Feb. 7	New Orleans, LA	Feb. 23	Sacramento, CA	Feb. 21	York, PA	Feb. 15

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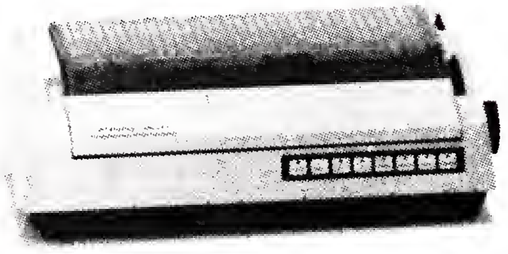

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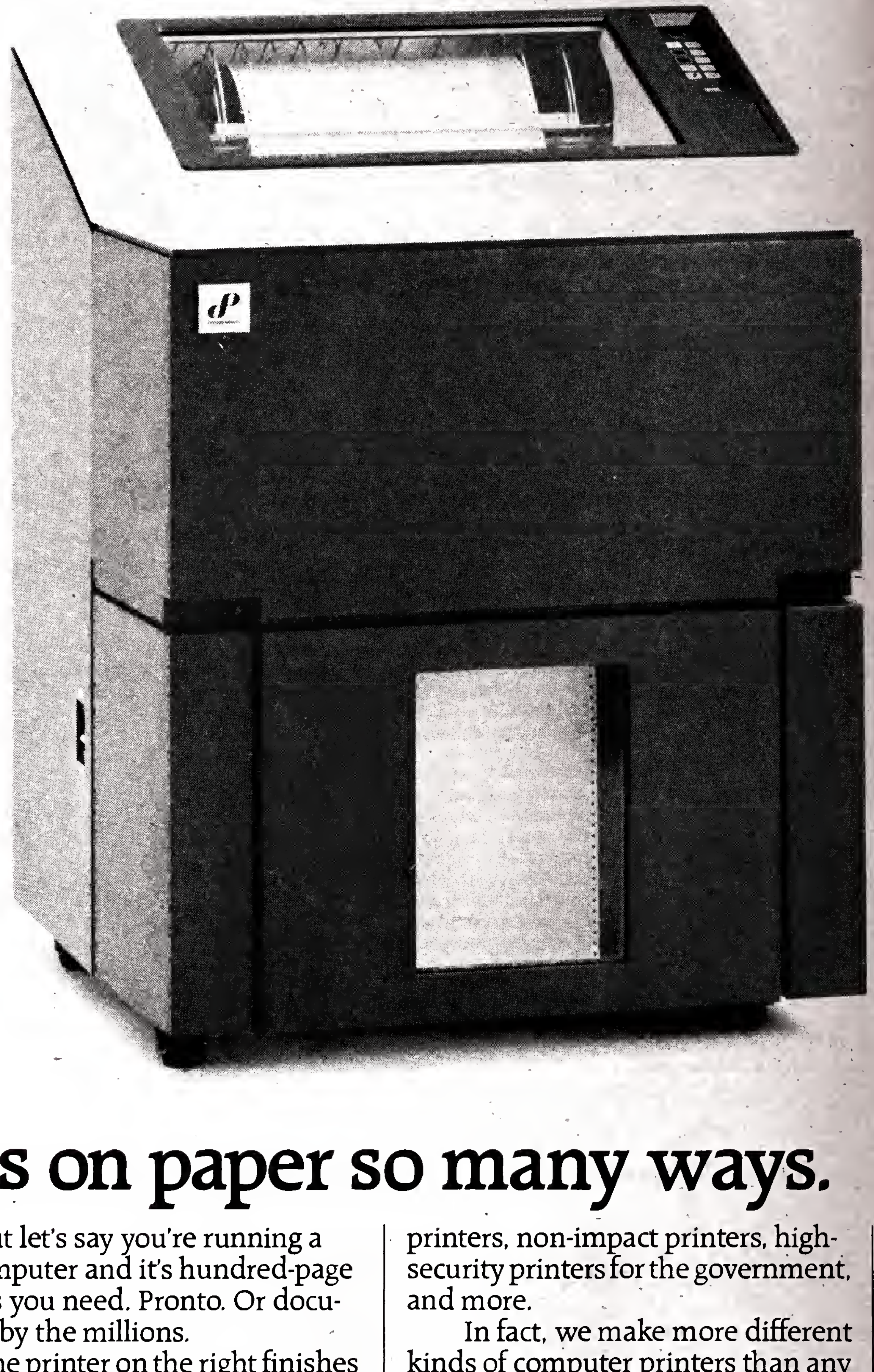

Nobody puts ideas on paper so many ways.

If you're using your printer with a personal computer, you probably need one that can handle a variety of functions.

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The pint-sized Dataproducts printer in the picture costs about as much as one good software package.

It prints spreadsheets, graphics and illustrations, labels, multi-part forms—even letters that look like they were typed.

But let's say you're running a big computer and it's hundred-page reports you need. Pronto. Or documents by the millions.

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IN DEPTH

DP

In Search of Excellence

Lessons from the best-sellers

A three-part series

Part one

By J. Daniel Couger

With a little interpolation and almost no extrapolation, the current best-sellers on general management can be applied to the data processing department.

For the first time since best-seller lists have been compiled, the top three in the nonfiction category are management-oriented books. Over the past six months, among the top three sellers have been 1) *In Search of Excellence*, 2) *The One-Minute Manager* and 3) *Megatrends*. Far down the list are the traditional top sellers: cookbooks, physical fitness advice and the sex manuals.

One can speculate on the reason: 1) the state of the economy, 2) the lack of quality in competing books or 3) the turn to seriousness resulting from worldwide crises. I favor a different explanation: The three books simply offer especially meaningful content.

These books would appear to be of interest primarily to boards of directors, chief executives and their immediate subordinates. Not so. They are also important to management at all levels within data processing. Granted, the reader must translate the general principles to the DP experience, and some appear to be only remotely related. But, with a little interpolation and almost no extrapolation, the guidelines in the three books have direct bearing on improving DP management.

I've taken on the task of translating — to DP circumstances — the key points of the three books. *In Search of Excellence* is analyzed here. Future issues will interpret the other two books.

The makings of success

With well over one million copies in print, *In Search of Excellence* is in a category attained by very few books. "It is not a book that is being bought solely by people in the hard-core business community," according to Dan Harvey, Harper & Row publicity director. "It is being bought by people who want to know how to run very small businesses, too."

Authors Thomas J. Peters and Robert H. Waterman Jr. report the results of a 2½-year research project on the key ingredients to success — not just a modicum level of success, but extraordinary success. Sustaining success is another selection criterion. For example, leading the Fortune 500 list this year was North American Coal Co., with an increase in profit of 2,276%. Despite its spectacular performance, this company was not included in the compilation by Peters and Waterman. Its success is of short duration.

There is no way of knowing how many copies of *In Search of Excellence* have been purchased by DP managers. Although the title is intriguing to any manager, subjects such as acquisition would not appear to be of direct value to a DP manager. Surprisingly, the material in that section of the book is quite applicable to the DP environment. In fact, most of the book is relevant.

Defining 'excellence'

The researchers, funded primarily by McKinsey and Co., began with a selection of 75 highly regarded companies. They studied annual reports and conducted intense, structured interviews. They also examined some "underachieving" companies for purposes of comparison. "We didn't concentrate much on this," the authors said, "as we felt we had plenty of insight into underachievement in our combined 24 years in the management consulting business."

The researchers did not look extensively at small companies. "Our major concern," they said, "was and is with how big companies stay alive, well and innovative." Therefore, few firms in the sample had annual sales of less than $1 billion or histories shorter than 20 years.

Not all industries were covered. Included were:

1. High-technology companies, such as Digital Equipment Corp., Hewlett-Packard Co., Intel Corp. and Texas Instruments, Inc.
2. Consumer goods companies, such as Proctor & Gamble Co., Chesebrough-Pond's Inc. and Johnson & Johnson.
3. General industrial goods companies, which included Caterpillar Tractor Co., Dana Corp. and 3M (Minnesota Mining and Manufacturing Co.).
4. Service companies, such as Delta Air Lines, Inc., Marriott Corp., McDonald's Corp. and Disney Productions.
5. Project management companies, such as Bechtel Group, Inc. and Fluor Corp.
6. Resource-based companies, such as Atlantic-Richfield Co. (Arco), Dow Chemical Co. and Exxon Corp.

The researchers did not look extensively at small companies. "Our major concern," they said, "was and is with how big companies stay alive, well and innovative." Therefore, few firms in the sample had annual sales of less than $1 billion or histories shorter than 20 years.

The researchers chose six measures of long-term superiority. Three are measures of growth and long-term wealth creation over a 20-year period. Three are measures of return on capital and sales. The six are:

1. Compound asset growth from 1961 through 1980.
2. Compound equity growth from 1961 through 1980.
3. The average ratio of market value to book value.
4. Average return on total capital, 1961 through 1980.
5. Average return on equity, 1961 through 1980.
6. Average return on sales, 1961 through 1980.

To qualify as a top performer, a company must have been in the top half of its industry in at least four out of six measures over the full 20-year period. (In fact, of the 36 companies that qualified, 17 ranked in the top half on all six measures, and another six ranked in the top half on five measures). Thus, any top performer must have scored well over the long haul on both growth and absolute measures of economic health.

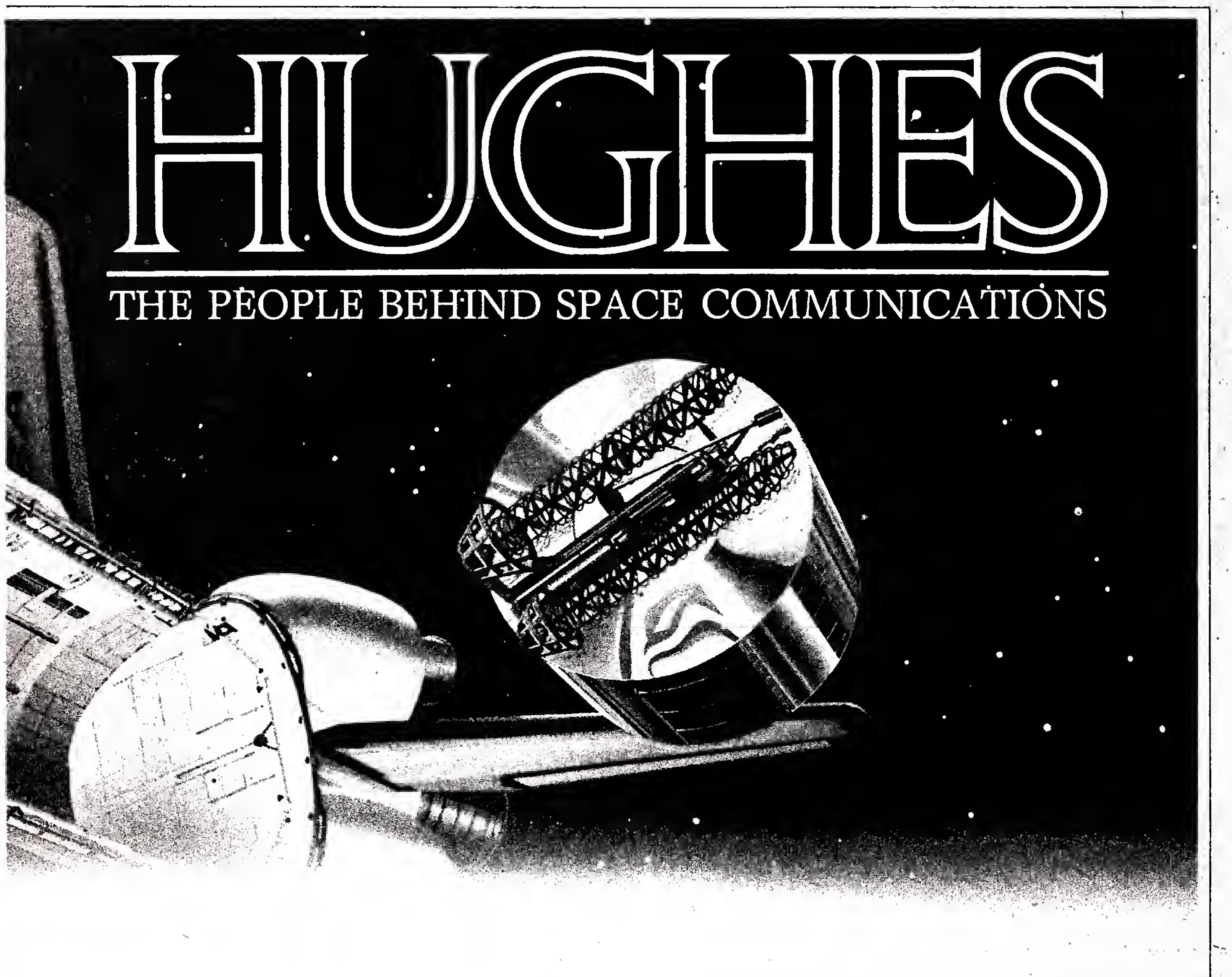
As a last screen, the researchers applied a "measure of innovativeness." They asked selected industry experts (for example, businessmen from within the industry) to rate the companies' 20-year record of innovation, defined as a continuous flow of industry bellwether products and services and general rapidness of response to changing markets or other external dynamics.

Characteristics of excellence

The researchers concluded that "the excellent companies were, above all, brilliant on the basics. Tools didn't substitute for thinking. Intellect didn't overpower wisdom. Analysis didn't impede action. Rather, these companies worked hard to keep things simple in a complex world. They persisted. They insisted on top quality. They fawned on their customers. They listened to their employees and treated them like adults. They allowed their innovative product and service 'champions' long tethers. They allowed some chaos in return for quick action and regular experimentation."

Eight attributes emerged as the most characteristic of excellent companies.

1. A bias for action. "Although analytical in their approach to decision making, the excellent companies are not paralyzed by that fact."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■ "Ready — Fire — Aim" is a common practice. The objective is to get something started, then improve on it.

■ Objectives are set at a practical size — a fine sense of the doable.

■ "Chunking" is utilized — breaking things up to facilitate organizational fluidity and to encourage action.

2. Close to the customer. "The excellent companies learn from the people they serve. They provide unparalleled quality, service and reliability."

■ A paramount objective is performance. Maytag Co.'s devotion to dependability earns a 15% price premium while also maintaining top market share.

■ Many of the innovative companies get their best product ideas from customers. Allen-Bradley Co. was driven to robotics not by its central labs but by its customers. DEC relies on customers to find uses for its computers.

■ Emphasis on service. Frito-Lay, Inc.'s 99.5% service level is not just an objective but an accomplishment. Its market share and return on investment are the envy of the industry.

3. Autonomy and entrepreneurship. "The excellent companies foster many leaders and innovators throughout the organization."

■ They don't try to hold people on so short a rein that they can't be creative.

■ They encourage practical risk taking and support good tries.

■ They are a "hive" of champions. A champion is not an intellectual giant or blue-sky dreamer, but a pragmatic person who takes someone else's theoretical construct if necessary and bullheadedly pushes it to fruition.

4. Productivity through people. "The excellent companies treat the rank and file as the root source of quality and productivity gain."

■ Management gets out of the office and onto the floor.

■ Every employee is seen as a source of ideas, not just a pair of hands. RMI, an intensely people-oriented company, with hardly a penny in investment spending, realized an 80% productivity gain over three years.

■ Almost every management says that people are important — but in reality, few place people concerns first in priority as do those companies.

5. Hands-on, value-driven. "The basic philosophy of excellent companies has more to do with their achievements than do technological or economic resources, organization structure, innovation and timing."

■ These companies pay explicit attention to values.

■ All of them have a well-defined set of guiding beliefs on which all policies and actions are premised.

■ Ironically, the companies with the most quantified statements of mission (precise financial targets) have done less well financially than those with broader, less precise, more qualitative statements of corporate purpose.

6. Stick to the knitting. "While there are few exceptions, the odds for excellent performance favor those companies that stay close to business they know well."

■ The most successful companies diversify around a single skill — the coating and bonding technology of 3M, for example.

■ The next group, in descending order of success, branches out into related fields — for example, General Electric Co.'s leap from electric power generation turbines to jet engines (another turbine).

■ Finally, the highest risk area — acquiring "a window on a new skill." These companies make sure the acquisition size is manageable enough to allow early, painless integration.

7. Simple form, lean staff. "Making an organization work has everything to do with keeping things understandable for the tens of thousands who must make things happen. The excellent companies keep things simple."

■ Size generates legitimate complexity; nevertheless, staff is deliberately kept small.

■ Virtually none of these companies has a matrix organization. Even in Boeing Co., Inc., where many of the matrix ideas originated, people operate in a binary way — they are either a part of the project team or are part of a technical discipline. No confusion exists about questions such as, "Which boss do I report to on this one?" or, "Do I keep everyone informed?"

■ Decades ago, Americans got hooked on a span-of-control guideline of five to seven people. Many of the excellent companies use the flat organization — fewer than seven levels of management compared to the more than 12 levels found in

> *The authors found that successful companies are a "hive" of champions. A champion is not an intellectual giant or blue-sky dreamer, but a pragmatic person who takes someone else's theoretical construct, if necessary, and bullheadedly pushes it to fruition.*

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other corporations.

8. Simultaneous loose-tight properties. "The eighth item is mostly a summary point. It is the coexistence of firm central direction and maximum individual autonomy."

■ The excellent companies push autonomy down to the shop floor or product development team, but are fanatic centralists around the few core values they hold dear.

■ Cost control and efficiency *follow* from the emphasis on quality, service, innovativeness, result sharing, participation, excitement and a problem-solving focus that is tailored to the customer.

■ The nature of the rules is crucial here. The rules in the excellent companies have a positive cast. They deal with quality, service, innovation and experimentation. Their focus is on building, expanding, *the opposite of restraining*; whereas most companies concentrate on controlling, limiting, constraint.

Excellence in dp management

1. Proactive instead of reactive.

■ Opportunistic: The system plan is oriented toward under-girding the objective of the firm — it is not just a consolidation of user requests for applications.

■ Innovative: Systems are designed to give the firm a competitive advantage, not just efficiency. An example is the order system of American Hospital Supply Corp. where the service is so comprehensive that the firm gained a major share of the business.

■ Prototypic: Do it, try it, fix it.

2. Listening to the user — intently and regularly.

■ Openness: Avoiding the attitude that users don't know enough about the technology to make creative contributions to design.

■ Joint venture: Eliminating the "we/they" atmosphere. Cooperatively creating a "Maytag," resulting in the "lonely repairman" environment.

■ Service orientation: "When our customer looks good, so do we." Top executives who were previously DP managers believe that peer evaluations significantly affected their promotion.

3. Concurrence in objectives, freedom in design.

■ Avoiding myopia: Not limiting design alternatives in hopes of expediting system development. Assurance that the best solution is attained can occur with only 5% of the project budget devoted to this phase of the life cycle.

■ Designating presidents: Once the project objectives are clarified, letting the leader be "president of his company" — with considerable autonomy in meeting objectives.

■ Nourishing champions: "A new idea either finds a champion or dies" — Edware Schon.

4. People are our most important resource.

■ Grab a grizzly: Originated by Hewlett-Packard, this concept means that people will tackle almost impossible tasks when they believe they have personal impact on a worthwhile project.

■ Respect: "People will flood you with ideas if you let them. Treat people as adults. Treat them as partners. Treat them with dignity. Treat them with respect. Treat them — not capital spending and automation — as the primary source of productivity gains" — Peter Smith.

■ Feedback: Which one of us does not have almost instant recall on positive feedback, regardless of its remoteness? For example, we still remember the positive strokes from elementary teachers, coaches and counselors. Creative managers think of dozens of ways to encourage their people.

> *DP in some banks had disastrous results when it went into the service bureau business, just because it had excess capacity. The experienced competition clobbered them. Other banks were successful because they marketed their expertise — application packages. They used proceeds to underwrite more sophisticated applications than they could have otherwise afforded.*

5. Demonstrating the value of values.

■ Value clarity: Translating the company's "guiding beliefs" into tangible entities. For example, identifying how system specifications can include provisions to enable a user department to achieve its quantitative objectives.

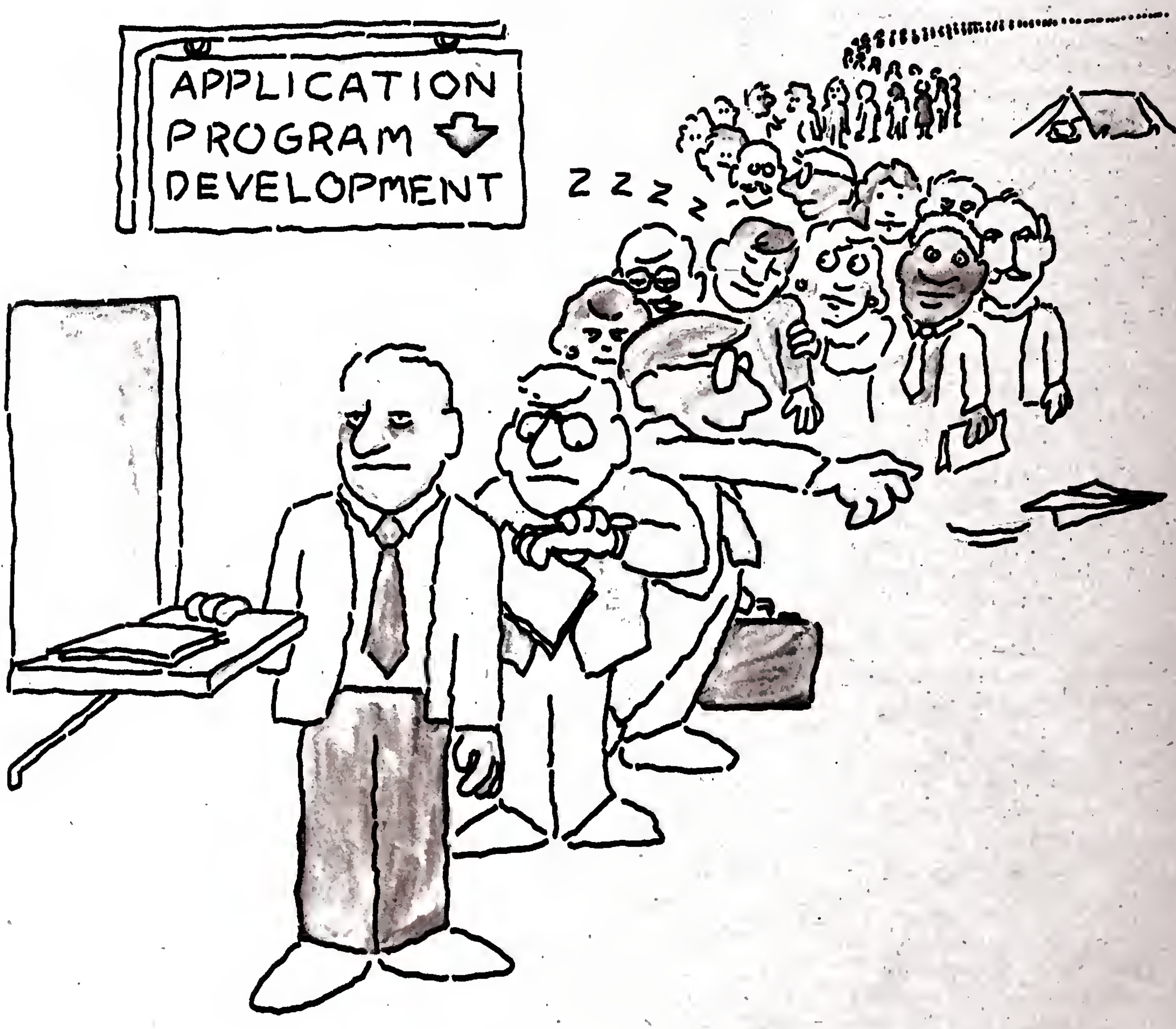
■ Value application: Making sure that the company's "guiding beliefs" are really guiding DP management actions.

■ Interaction: Managers who are also leaders are out interacting with their people — not to monitor performance but to encourage and share ideas and ideals.

6. Leveraging strengths.

■ Concentrating on lifestream systems: Ensuring the efficacy of those systems key to the life and

m3278/SPF puts micros on-line to mainfra



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growth of the firm.

- Judicious expansion: DP in some banks had disastrous results when it went into the service bureau business, just because it had excess capacity. Their experienced competition clobbered them. Other banks were highly successful because they marketed their expertise — application packages. They used proceeds to underwite much more sophisticated applications than they could have otherwise afforded.
- Evolution, not revolution: Only agree to be the beta test site — for both vendor hardware and system software — when you gain a quantum leap on competitors. Accept risk in high-ROI areas where you are most knowledgeable — application software.

7. Tight belt, loose coat.

- Destaffing: How? One way is rotating line people through staff positions to minimize "staff" attitude and to avoid staff empire-building.
- Matrixless: Use "one-supervisor" philosophy. Clarity of direction offsets inconvenience and cost of going outside the project team for high-tech advice.
- Looseness: Allowing undulating boundaries so teams can continuously interact and share ideas.

Is it possible for a DP department to reach the plateau of excellence within a company that itself is not on the Peters/Waterman list? The answer is yes, unequivocally.

8. Centralized decentralization.

- Flexibility: Using a fluid organizational structure to take advantage of technological advances. For example, as network costs diminish, transferring people and computing capability to user nodes to ensure close communication.
- Centrality: Keeping at central core only those activities which will be diluted by decentralization, such as corporate system planning/control and design of company-wide systems.
- Centralist values: When values are central, implemented in people-oriented programs, desired results in areas like standard-compliance and performance (both quality and quantity) follow naturally.

Microcosm excellence possible

Is it possible for a DP department to reach the plateau of excellence within a company that itself is not on the Peters/Waterman list? The answer is yes, unequivocally. An example is the DP department of American Hospital Supply. Two others where I have observed conformance to a majority of the eight criteria for excellence are the Hartford Insurance Co. and Ford Motor Co.

An interesting question is whether the converse is true. Do any of the top achievers have a less than successful DP department? Data is not available to answer that question. On the other hand, there are some DP departments in the "excellent" companies whose excellence is generally recognized. Texas Instruments is one. Another is IBM.

Although only two excellence criteria refer specifically to people-orientation, that emphasis pervades. While company performance is the principal evidence of people-orientation, the authors included numerous supporting statements from managers.

Delta President Tom Beebe describes an open-door policy for everyone from pilots to flight attendants. No one — not the chairman, president or vice-president — has an administrative assistant whose job it is to screen such visitors. Hewlett-Packard's Bill Hewlett relates his conviction that employees want to do a good job, a creative job, and will do so if given the proper environment. Key here is treating workers with consideration and respect.

The following statement by Peters and Waterman not only summarizes the main factors which identify the excellent companies, it also serves well as the set of guiding beliefs for a DP department aspiring to excellence: "These companies are simultaneously externally focused and internally focused — externally in that they are truly driven by their desire to provide service, quality and innovative problem-solving in support of their customers; internally in that quality control, for example, is put on the back of the individual line worker, not primarily in the lap of the quality control department. Service standards likewise are substantially self-monitored. The organization thrives on internal competition. And it thrives on intense communication, on the family feeling, on open door policies, on informality, on fluidity and flexibility, on nonpolitical shifts of resources. This constitutes the crucial internal focus: the focus on people."

About the Author

J. Daniel Couger holds the title Distinguished Professor of Computer and Management Science at the University of Colorado, Colorado Springs. He has lectured in more than 50 countries and written 15 books and more than 60 papers.

Prior to his academic appointment, Couger served as a manager in the computer field. In 1977, he was selected as U.S. Computer Science Man of the Year.

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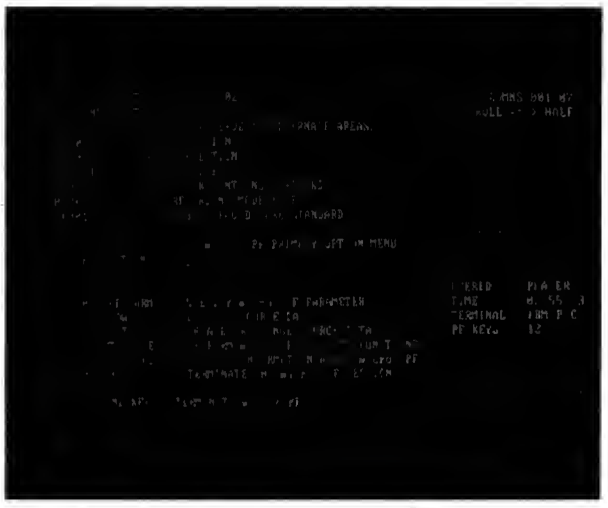

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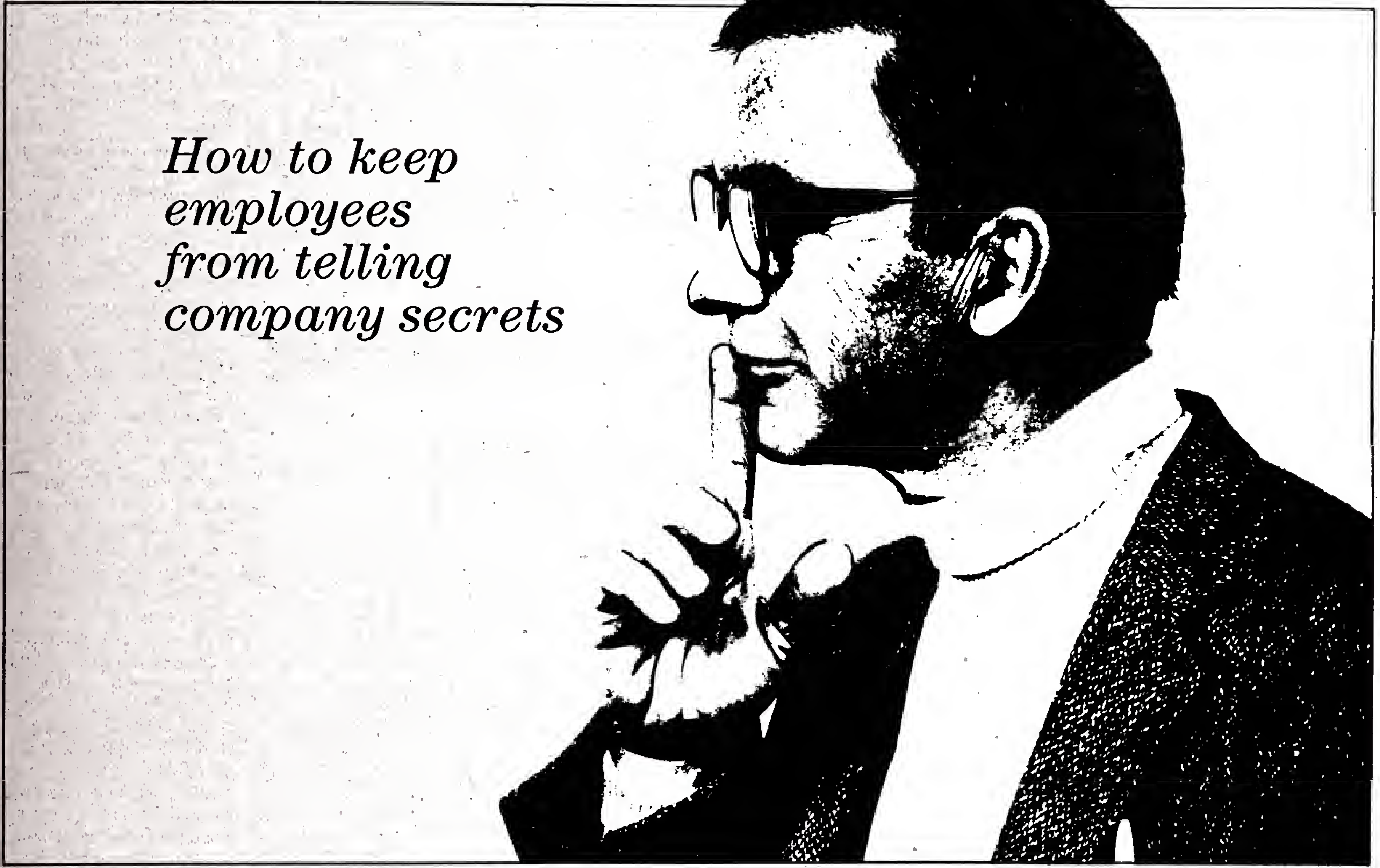

How to keep employees from telling company secrets

Negotiating, drafting, executing and enforcing employment contracts

By Tobey B. Marzouk

The absence of a carefully drafted employment contract can be devastating to a firm whose business survival depends on the protection of its proprietary rights.

Firms operating in the high-technology marketplace often commit a crucial business error: They fail to provide an employment contract that limits employees' ability to divulge confidential information and compete with or otherwise damage the employer.

Since the employment contract will ultimately govern relations between employer and employee, it is essential for any firm working in the high-tech area to establish careful procedures for negotiating the agreement. Failure to comply with certain procedural and legal requirements before executing a contract may nullify its effect or preclude its enforcement. A firm engaged in contract negotiations with prospective employees should observe the following guidelines.

1. Watch what you say during contract negotiations. Company representatives should be extremely careful in what they say to prospective employees. Even though a contract may be drafted to prevent an employee from enforcing oral commitments not embodied in that contract, a court may, in certain circumstances, rely on oral statements made by the employer to determine the meaning and intent of the parties.

In Weiner vs. McGraw-Hill, Inc., which was decided in New York in 1982, a prospective employee was assured by a company representative that the firm's policy was to terminate employees only for "just cause," and that employment at the company had the advantage of job security. The employment contract also referenced the employer's personnel handbook, which represented that "the company will resort to dismissal for just and sufficient cause only."

After several years of employment, the employee was dismissed for "lack of application." He subsequently brought suit against his employer for wrongful dismissal. The New York Court of Appeals held that the employee could sue his former employer based on the oral representations and assurances made to him prior to his employment, as confirmed by the statement of policy set forth in the firm's personnel manual.

Clearly, an employer should not make any gratuitous oral promises during contract negotiations. If relied upon by the prospective employee, those promises may come back to haunt the employer later.

2. Carefully draft personnel policy manuals. In addition to oral assurances made by the employer during contract negotiations, written statements in office handbooks or personnel manuals may be used to expand an employee's rights under a contract. In several recent court cases, employees have been able to enforce personnel policy manuals as supplements to their employment contracts and thereby bind their employers beyond the specific terms of the individual contracts.

While a personnel manual serves the useful function of informing employees of company policies, a firm must exercise extreme caution in drafting the manual. A statement should be included that the manual is not intended to constitute any type of contract between the company and the employees. Include words to the effect that the policies set forth in the manual, particularly those involving employee terminations, are meant only as guidelines, not rigid standards.

This disclaimer should not, however, be used as a substitute for careful drafting of the manual's contents. Where the disclaimer contradicts other expectations raised by the contents of the manual, the ambiguity in the manual will be construed against the employer. In addition, the manual should not include unnecessary detail about termination policies. The more specific the standards and procedures for termination, the more likely an employee will claim substantive and procedural rights arising from the manual and the more likely a particular termination will violate the standards set forth in the manual.

In short, a personnel or office manual may be used against an employer. The employer should make every effort to limit the binding effect of the manual to avoid unforeseen liabilities to employees.

3. Give the employee ample opportunity to review the contract. Often, high-tech firms present a proposed employment contract to a new employee on his first day of work, thereby giving him no meaningful opportunity to review the contract or negotiate specific terms. As a matter of policy, however, the firm should provide the prospective employee a copy of the employment contract before he starts work. Following this procedure will guard against any allegation that the employee was placed at a disadvantage relative to the employer.

An employer who fails to give a prospective employee this opportunity to review the proposed contract may be unable to enforce it, particularly if a court concludes that the employee was not given a fair chance to negotiate the terms of his employment. In Pemco Corp. vs. Rose (decided in 1979), the defendant was offered and accepted employment with an engineering firm in West Virginia. Thereafter, the defendant canceled his housing lease in Washington, D.C., signed a contract to purchase a home in West Virginia and moved all his personal belongings to his new place of residence. When the defendant arrived at his employer's offices for the first day of work, he was asked to sign an "agreement" restricting his right to compete with his employer should he leave the firm.

Having already moved to West Virginia, the defendant had no choice but to sign the contract. In an action by the former employer to prevent the defendant from working for one of the employer's competitors, the court concluded: "Under the circumstances in which the employee found himself, it is beyond cavil that his ability to negotiate with respect to the postemployment restraint was markedly diminished. At the very least, the employee was not as freely able to bargain concerning the provision as he was at the time [he received the offer of employment]. The covenant not to compete was not a freely bargained-for term or condition of employment, but rather was a term or condition of employment extracted from or imposed upon an employee under circumstances which deprived him of any fair ability to negotiate."

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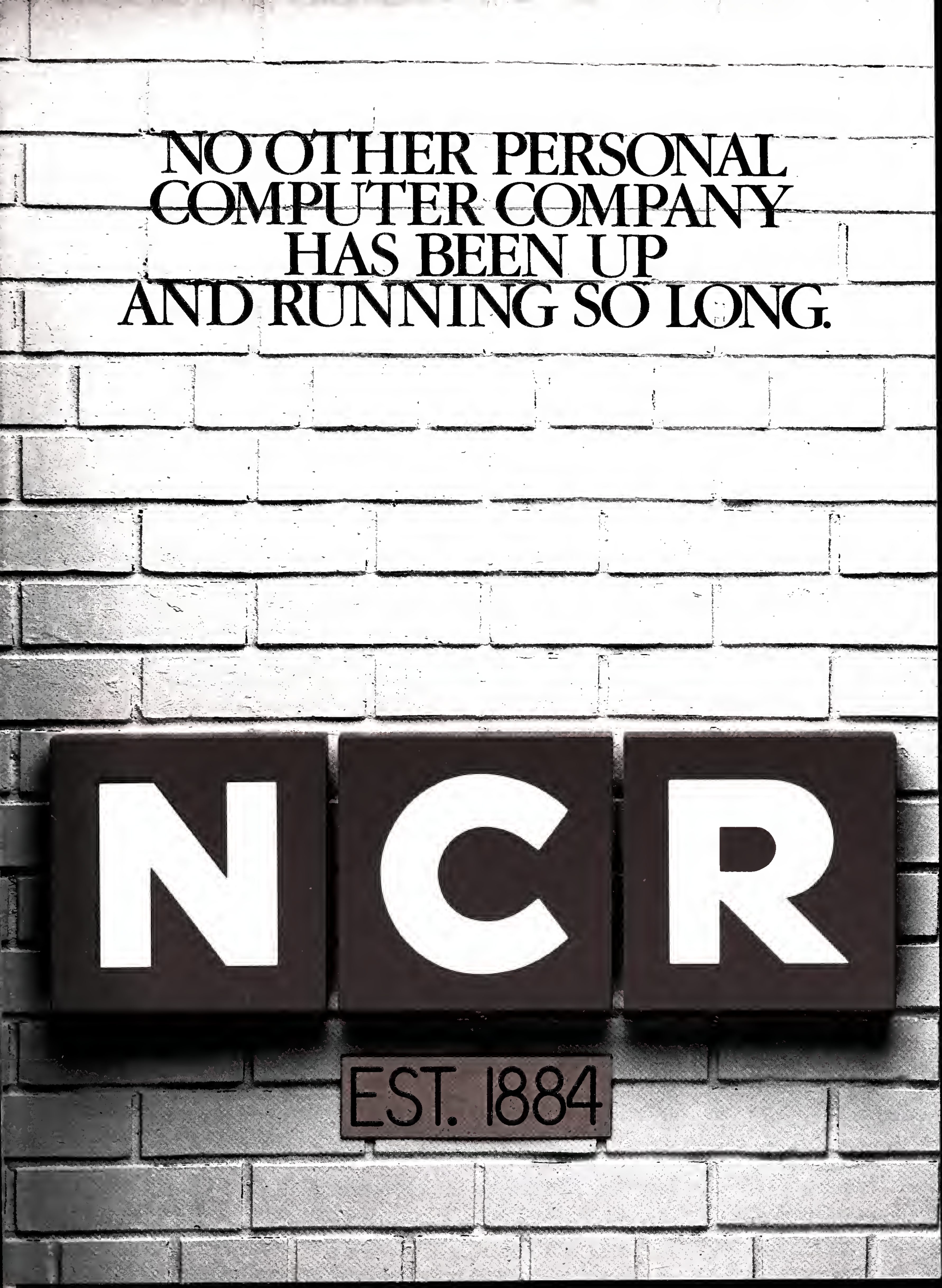
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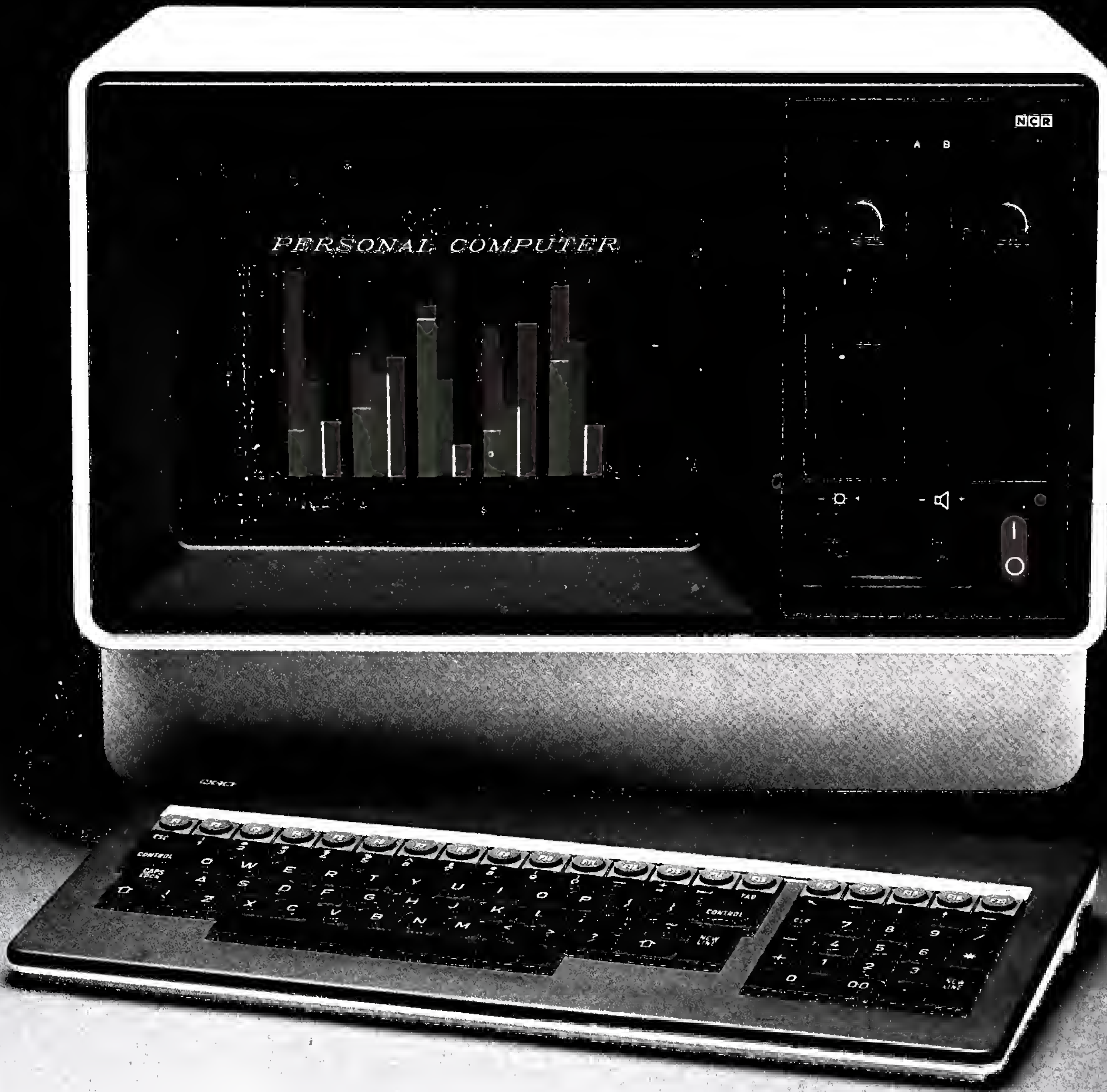
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The NCR name is a quick foot in the door. And from there on, the Personal Retail Computer's advanced features sell themselves.

The PRC comes with 256K of memory, expandable to 512K with a plug-in cartridge. An electronic cash drawer and a choice of a receipt or an 80-column report printer, or both, complete the hardware package.

But it's the PRC's retail management capabilities that make it such an easy sell.

First of all, it's easy to use. Really easy. 9 dedicated function keys handle standard transaction sequences with a single keystroke. Keying errors are easily corrected, eliminating time-consuming voiding procedures. Helpful screen messages, in plain English, guide clerks step-by-step through each transaction.

Commands are in plain English, too, so clerks don't have to be trained to remember confusing codes. And with an optional bar code reader, sales data can be fed into the system automatically.

The system is secure, as well as easy to use. Access is granted or denied by an I.D. number verification routine. And sensitive sales information can be password-protected, field by field.

And of course sales reports can be automatically generated by salesperson and item at any time during or after the business day. So users can keep better control of their business.

To extend that control even further, our optional Inventory Management software can store up to 19 separate facts about as many as 32,000 unique inventory items.

Inventory levels are then automatically displayed and adjusted during each sale, giving store managers a clear picture of what they have on hand at what prices. A CPA-recommended profitability index is an integral part of the package.

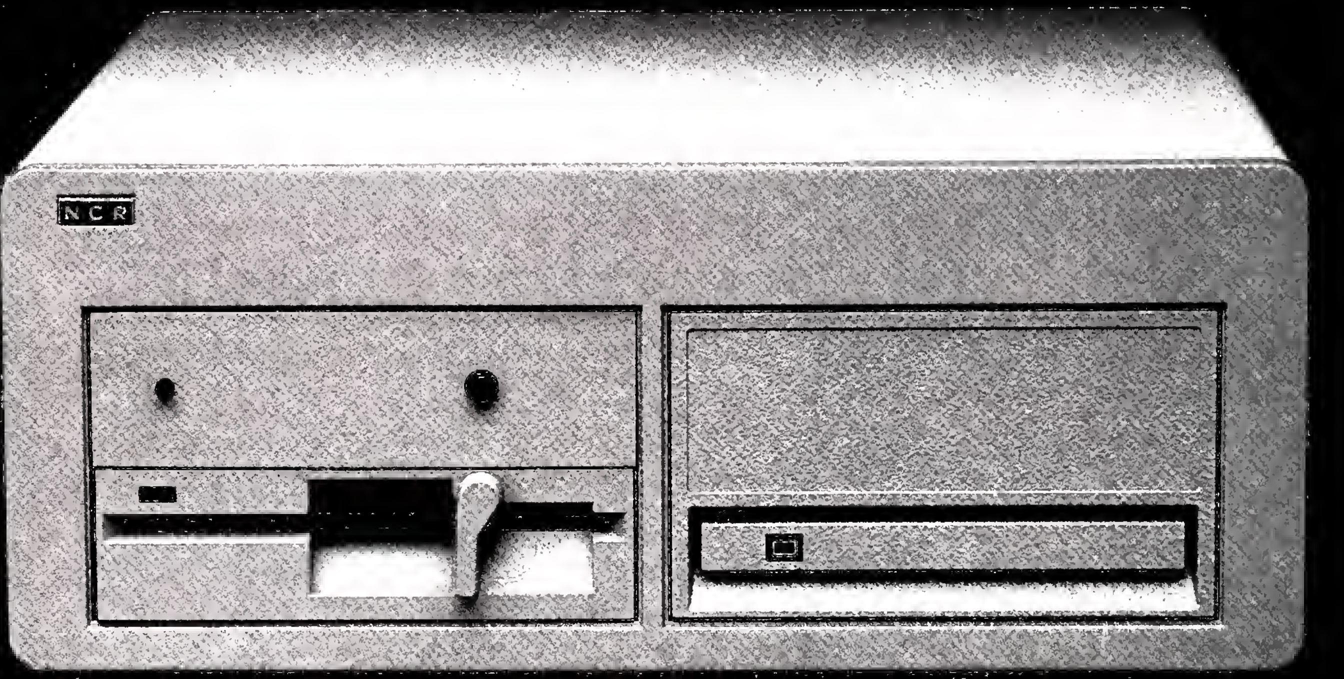
To make our retail management system into a complete company management system, our retail software can be interfaced with general accounting packages.

All at a price far lower than a traditional retail management system.

Surprised?

You shouldn't be.

ESTABLISHING BETTER INTERPERSONAL COMMUNICATIONS.



NCR'S PERSONAL COMPUTER NETWORK.

A personal computer can become an even more effective business tool if it offers facilities for exchanging ideas and data between departments and offices.

The NCR File Sharer lets our PC do just that. It can connect up to 64 PCs, from most major manufacturers, with the latest local area network technology.

PCs in the network can access databases and share files, records and peripherals. That helps every member of an organization work together, with the same common information, at the lowest possible cost.

The File Sharer offers system storage from 10-32MB, enough for most applications.

Because some corporate data is not meant to be shared, extensive security features are available to protect individual files from unauthorized access.

Despite its advanced capabilities, our Personal Computer network is easy to install. Right in your customer's office.

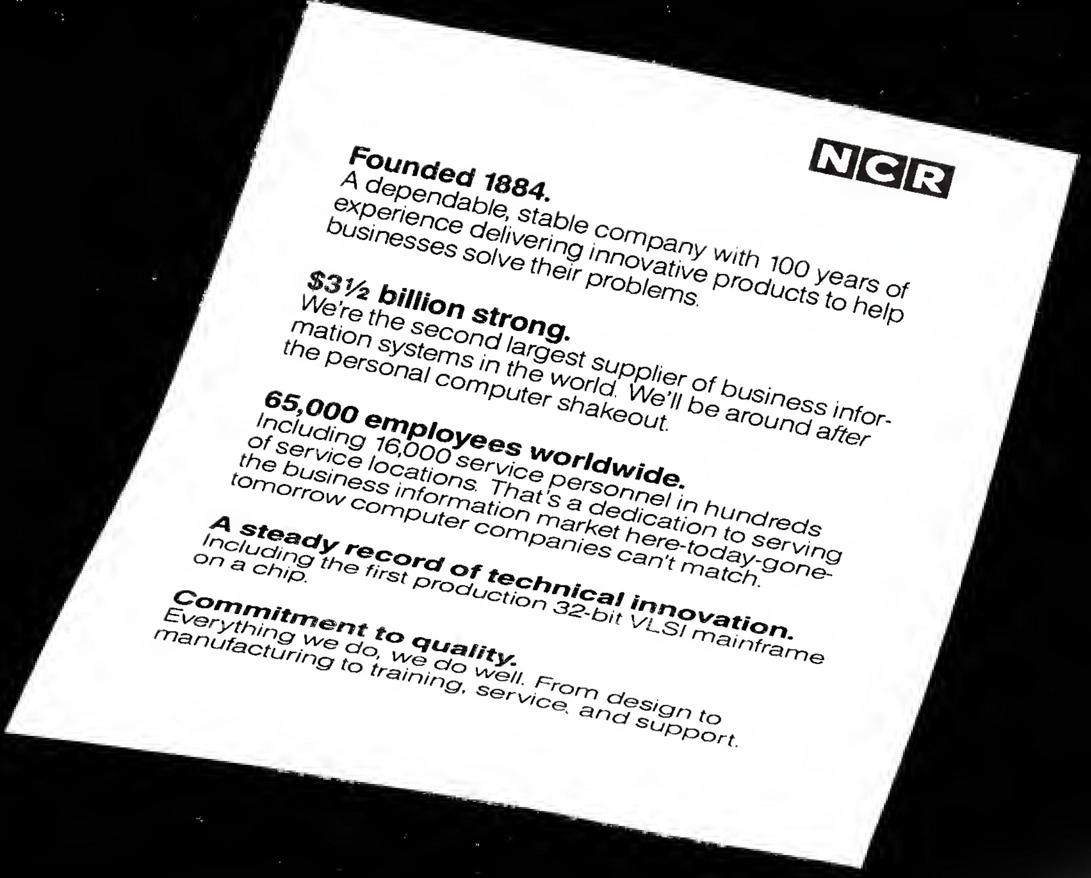
More PCs can be added to the network at any time.

And upgrades are available to expand its capabilities even further.

Impressive?

Yes. But by now that should come as no surprise.

CHOOSING THE RIGHT COMPUTER COMPANY IS EVEN MORE IMPORTANT THAN CHOOSING THE RIGHT COMPUTER.



NCR

Founded 1884.
A dependable, stable company with 100 years of experience delivering innovative products to help businesses solve their problems.

$3½ billion strong.
We're the second largest supplier of business information systems in the world. We'll be around after the personal computer shakeout.

65,000 employees worldwide.
Including 16,000 service personnel in hundreds of service locations. That's a dedication to serving the business information market here-today-gone-tomorrow computer companies can't match.

A steady record of technical innovation.
Including the first production 32-bit VLSI mainframe on a chip.

Commitment to quality.
Everything we do, we do well. From design to manufacturing to training, service, and support.

GOOD NEWS FOR DEALERS, SOFTWARE DEVELOPERS AND COMPUTER ENTREPRENEURS.

Until now, computer dealers like you have been at the mercy of one or two major suppliers. And a couple hundred companies who'd like you to believe they're going to make it big.

Now you and your customers have a choice.

A company that's a strong traditional force in computers. One that's financially capable of playing the game for years to come. One with a name that first-time buyers know and trust.

To find out how to become an Authorized NCR Personal Computer Dealer, just call or write us today.

We also know that there are a lot of talented PC software developers out there who feel as if they're lost in the crowd. Well, we're looking for a few of the very best to help us add depth to our already broad software line.

We also know that there are countless entrepreneurs all fighting for attention in one big aftermarket.

And we want you to fight on our team.

Because we're committed to the future of the NCR Personal Computer and future generations to come.

We're committed to supporting our products. And doing so on a scale no upstart start-up can begin to match.

Which is just what you'd expect from NCR.

NCR PERSONAL COMPUTER

Feature Highlights
- Integrated design with small footprint
- VLSI technology
- Dual processors (8/16-bit)
- Customer installable
- Monochrome or color display
- Customer upgradable
- Fully illustrated self-training documentation
- Industry standard I/O interfaces
- Expandable memory and disk storage
- Detachable low profile keyboard
- Easy-to-use diagnostic cartridge
- Industry standard operating systems
- Powerful graphic processor
- Windowing capabilities

Central Processor	Z-80A* 8-bit (4 MHz) 8088 16-bit (5 MHz)
Memory	RAM—64K Upgradable to 512K ROM—4K
Graphic Processor Memory	32K (monochrome) 96K (color)
Video Display	12″ monochrome green/black or color 24 lines 80 characters/line 640 x 400 dot addressable
Keyboard	Detachable low profile Alphanumeric + numeric key pad 20 programmable function keys
Disk Drives	Configured with two flex disks or one flex disk and one Winchester disk
Flex Disk	5¼-inch integrated Double density, double sided 500 KB each unformatted 320 KB each formatted
Winchester Disk	5¼-inch 10 MB integrated or 30 MB external
Peripheral Adapter	Centronics parallel interface RS232C serial interface
Communications Adapter	RS232C serial interface (async.) NCR local area network interface
Operating System	CP/M,® MS-DOS®

Physical Dimensions	Processor	Keyboard
Height	14.9 in.	1.5 in.
Width	18.1 in.	16.9 in.
Depth	14.6 in.	8.5 in.
Weight	52.9 lbs	3.3 lbs
Environmental		
Operating Temperature	50-95°F	
Relative Humidity	20-80%	

PERSONAL RETAIL COMPUTER

256K Memory
Retail Management Software
RS-232C Interface
Electronic Cash Drawer
Centronics Interface
Choice of Receipt or 80 Column Printers (option)

NCR LOCAL AREA NETWORK

Transmission Rate	1 megabit per second
Transmission Link	Twisted pair cable, up to 4000 feet in length
Network Access Technique	CSMA
Users/Devices Connectable	64

FILE SHARER

I/O Processor	On-board RAM and controlware
Fixed Disk	10-32MBytes

Specifications subject to change without notice.
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MS-DOS® is a registered trademark of Microsoft Corporation.
Z-80® is a registered trademark of Zilog Corporation.
Products for delivery in the USA will comply with appropriate FCC rules.

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Dealer Marketing Division

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copy of the employment contract prior to employment may seriously undermine the validity and enforceability of the contract.

4. Determine whether the prospective employee is bound by a prior employment contract. Given the frequency of job changes among professional employees at high-tech firms, an employer should know whether a prospective employee is bound by a contract with a former employer that restricts the scope of the employee's work. During contract negotiations, therefore, the employer should specifically ask the prospective employee whether the employee is still subject to a prior employment contract.

If the employee is not bound, then the employer should obtain a written assurance to that effect. If, however, the employee is subject to a prior employment contract, the new employer should consult with counsel to determine (a) whether and to what extent the contract does in fact restrict the prospective employee's ability to work for the new employer, (b) whether the restrictions are enforceable and (c) the manner in which the new employer should contact the old employer to discuss the scope and effect of the prior employment contract.

Absent a careful review of prior contractual restrictions on the prospective employee, the new employer and employee may find themselves subject to a suit for injunctive relief and/or damages by the former employee.

Drafting the contract

The terms and conditions in any employment contract generally depend upon the particular needs of the firm, as well as the prospective employee's scope of employment. The firm should draft the employment contract so as to protect its business interests and proprietary rights, while giving the employee a clear understanding of his obligations under the contract. The following guidelines should be considered in drafting an employment contract.

1. Protect trade secrets and confidential information through confidentiality and nondisclosure agreements. Perhaps the most important provision in any computer-related employment contract is a confidentiality and nondisclosure agreement. Under the terms of this agreement, the employee pledges to hold in confidence and not to disclose directly or indirectly trade secrets and confidential information obtained from the employer during the course of employment.

Such trade secrets and confidential information may include:

- ■ Discoveries or inventions.
- ■ Ideas or concepts.
- ■ Software (object code and source code), regardless of the stage of development.
- ■ Software documentation, including flowcharts and diagrams.
- ■ Designs, drawings and models.
- ■ Internal specifications and testing procedures.
- ■ Data and data bases.
- ■ Marketing, development and research plans.
- ■ Novel techniques and procedures.
- ■ Certain kinds of customer lists.
- ■ Bidding policies and procedures.
- ■ Miscellaneous marketing information concerning finances, pricing policies and price lists.

A confidentiality and nondisclosure agreement specifically restricts the employee from divulging to the public,

> *Given the frequency of job changes among professional employees at high-tech firms, an employer should know whether a prospective employee is bound by a contract with a former employer that restricts the scope of the employee's work.*

Computer Interruptus

Midnight. And you wish you would be left in the dark. But miles away in the DP Department, a misplaced DD override, an invalid concatenation, or some other equally obscure JCL error brought production to a standstill.

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particularly the employer's competitors, any information treated as secret or confidential by the employer. To qualify for trade-secret protection, the information must fulfill three criteria. First, the information must be "used in one's business" and must give the employer an opportunity to obtain an advantage over competitors who do not know or use it (Restatement of Torts, 1939).

Second, the information must be unique or not commonly known. "[M]atters of public knowledge or of general knowledge in [the particular] industry cannot be appropriated by one as his secret" (Sperry Rand Corp. vs. Pentronix, 1970). With respect to software, uniqueness requires the application of "new principles and concepts with unique engineering logic and coherence" (Com-Share vs. Computer Complex, Inc., 1971) and the expenditure of time and money for the development of new software features that provide the employer a competitive advantage.

As a practical matter, most software will be treated as unique, since any given program will involve numerous algorithms and programming decisions that vary with each programmer and result in differences in "speed, accuracy, cost and commercial feasibility . . . from system to system" (Com-Share vs. Computer Complex, Inc.).

Third, to acquire trade-secret protection for business information imparted to an employee, the employer must treat such information as secret and must bind the employee, either expressly or implicitly, to preserve the trade-secret status of the information. This will require the employer to preserve confidentiality by instituting certain programs and policies, which will be discussed in detail below.

To ensure complete protection of its trade secrets, a firm should require its nontechnical support personnel, as well as its technical employees, to sign confidentiality and nondisclosure agreements. Nontechnical or lower-level employees often have access to considerable proprietary data. Absent a specific agreement, an employer may be unable to prevent such employees from divulging trade secrets or confidential business information.

Similarly, independent contractors and visitors may acquire or have access to a firm's trade secrets. To preserve the confidentiality of such information, the firm should also require these individuals to sign confidentiality and nondisclosure agreements.

Such agreements, when carefully enforced, serve to place employees and other affected parties on notice that their jobs might involve trade secrets. The employee is therefore more likely to be "secrecy conscious" and to exercise prudence with respect to confidential matters entrusted to him. Confidentiality and nondisclosure agreements can also assist the firm in convincing its existing and potential clients that confidential information submitted to it will be protected from disclosure. The firm is therefore advised to require all prospective employees and independent contractors, as well as visitors with access to confidential information, to sign such agreements.

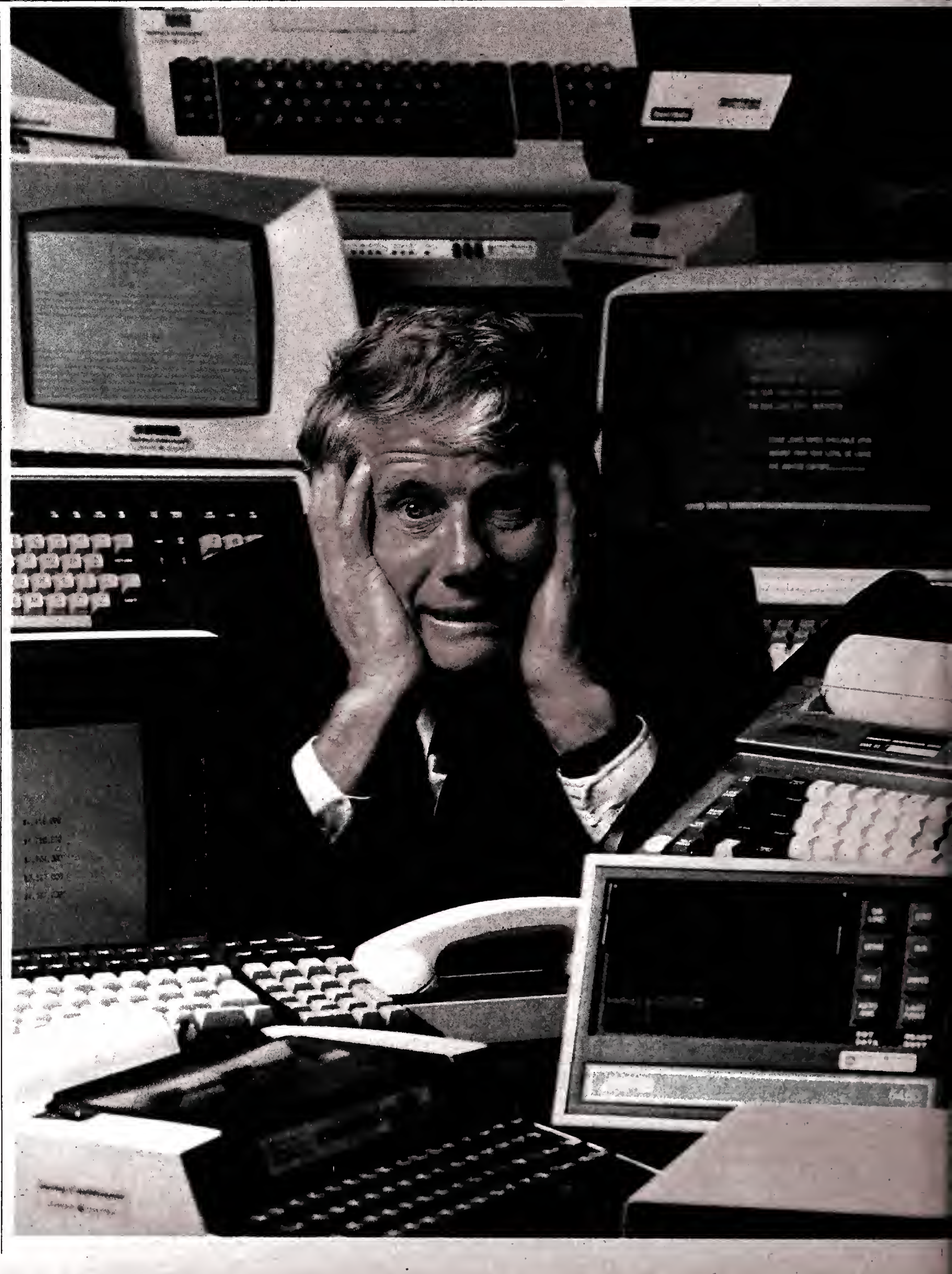
2. Protect trade secrets and confidential information through covenants not to compete. In addition to demanding that employees, independent contractors and visitors execute confidentiality and nondisclosure agreements, an employer should protect his confidential information and trade secrets by requiring professional employees to sign covenants not to compete. A covenant not to compete seeks to prevent an employee with access to sensitive proprietary information from competing with or working in the same line of business as his former employer within a given geographic area and for a given period of time.

The practical effects of such a covenant are (a) to prevent the employee from directly or indirectly disclosing trade secrets to any new employer who might be in competition with the old employer, (b) to prevent other firms from "buying" confidential information by hiring employees of a competitor and (c) to prevent the employee from appropriating confidential information to start his own business.

To ensure complete protection of its trade secrets, a firm should require its nontechnical support personnel, as well as its technical employees, to sign confidentiality and nondisclosure agreements. Nontechnical or lower-level employees often have access to considerable proprietary data.

3. Make sure the employment contract transfers to the employer the rights to all works by the employee. Under the Copyright Act of 1976, a computer program or other work prepared by an employee within the scope of his employment is a "work made for hire," and the employer or other person for whom the work was prepared is considered the author and owns all rights in the copyright.

Accordingly, absent an



employment contract that provides otherwise, copyright in all the works produced by an employee in fulfilling his duties vests with the employer. Some question, however, might arise as to whether an individual is an "employee" — under the direct control and supervision of the employer — or an independent contractor and whether work performed by an employee is within the scope of his employment. To avert any misunderstanding or confusion between the employer and the employee on these questions, the employment contract should include the following provisions, tailored to fit each employer's needs:

(i) All work by the employee or independent contractor is deemed to be a "work made for hire" to which copyright vests with the employer.

> *Firms should include a provision in all employment contracts restricting the employee, directly or indirectly through a family member or other person acting on his behalf, from serving as an officer, director or employee of another company without prior approval of the employer.*

(ii) To the extent any work performed by the employee or independent contractor is not a "work made for hire," copyright in the work is assigned and transferred to the employer.

(iii) Copyright in any work performed during work hours (including lunch), on the employer's premises, or using the employer's facilities or money vests with and is transferred to the employer.

(iv) The employee must disclose, assign and transfer to the employer all patent and trademark rights to any ideas or inventions developed during the course of employment that involve the employer's business and products.

4. Include family members in the employment contract. Too often, computer firms fail to place any contractual restrictions on the employee's family. To prevent the improper or unauthorized use of trade secrets and confidential information by the employee and his family members, firms should include a provision in all employment contracts restricting the employee, directly or indirectly through a family member or other person acting on his behalf, from serving as an officer, director or employee of another company without prior approval of the employer. In addition, the employee should be restricted from owning an interest in any competitor of the employer, if such interest is significant enough to interfere or conflict with the employee's responsibilities and obligations to the employer.

The courts have held that such contractual provisions are reasonable and not in violation of antidiscrimination laws. In Moore vs. Honeywell Information Systems, Inc., for example, a federal district court upheld a policy restricting employees and their family members from working for or owning an interest in a computer firm's competitors. The court reasoned that where one family member, a spouse, is engaged in a competing business, "it would be perfectly reasonable to conclude that the interests of both parties will eventually intertwine, since the success of the spouse's competing business will be of a real and direct benefit to both spouses."

The court went on to note that in the computer industry, a company policy restricting family members is both reasonable and essential:

"Honeywell [the employer] is undoubtedly in possession of valuable trade secrets, such as software programs, marketing techniques, market studies and other valuable information developed perhaps at great cost to the company. The employment policy here seems to be a reasonable means to prevent the improper and unauthorized use of such information by persons or businesses which may unjustly benefit themselves with such information."

To avert any conflict of interest, therefore, a computer firm is well advised to place restrictions on family members of its employees.

5. Make sure the contract identifies a jurisdiction or forum whose law will govern.

The law governing employment and contractual relations varies from state to state. Accordingly, a firm should specify in the employment contract the jurisdiction or forum whose law will control the

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The use of arbitration to resolve contract disputes between an employer and an employee is usually less expensive and more speedy than court litigation and should be considered seriously by the employer.

interpretation and enforceability of the contract. The selection of a jurisdiction should be made in consultation with counsel, based upon such factors as whether the employer and employee have sufficient contacts with the particular state and whether the governing state law is favorable to the employer.

The contract should also require the employee to consent to jurisdiction in the appropriate state(s) most convenient to the employer. In this way, if legal action must be initiated against an employee to enforce the terms of an employment contract, the employer will not be required to litigate his case in a distant jurisdiction. Courts, however, will not enforce such provisions when they are so burdensome as to be unconscionable.

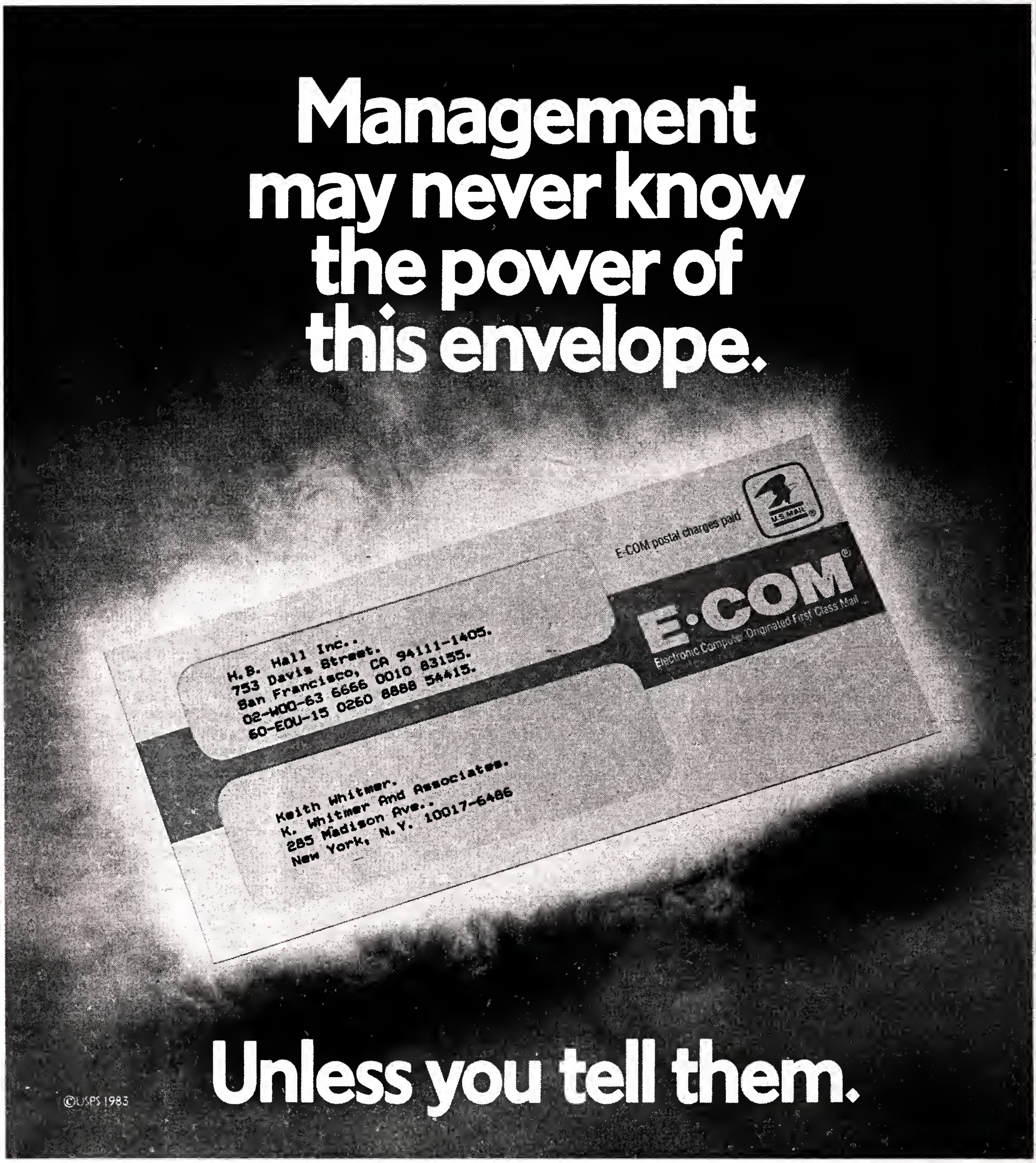
Finally, the employer might wish to require employees to submit certain contractual disputes to an arbitration board pursuant to standards and guidelines set forth in the employment contract. The use of arbitration to resolve contract disputes between an employer and an employee is usually less expensive and more speedy than court litigation and should be considered seriously by the employer.

6. Include a severability clause in the employment contract. A severability clause should be included in every employment contract. Such a clause states that every paragraph or condition in the contract is considered a separate entity and may be enforced separately, regardless of the validity of the remainder of the contract. If a contract lacks a severability clause, a decision by a court to strike one contract provision could void the entire contract. A severability clause therefore ensures that if one paragraph in the contract is declared invalid, the other paragraphs will remain enforceable.

7. Include an integration clause in the employment contract. Another provision that should be in every employment contract is an integration clause. This clause reflects the intention of the parties that the written contract is an integration of the entire agreement and constitutes the sole evidence of such an agreement. A typical integration clause reads: "The employee agrees that this contract is the complete and exclusive statement of the agreement beteen the parties, which supersedes all proposals or prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement."

The purpose of an integration clause is to prevent both parties from relying upon statements made prior to, during or after contract negotiations. In the absence of an integration clause, a court may be inclined to expand the contract terms by looking to the general subject matter of and the circumstances surrounding the contract, particularly if the contract is fragmentary, ambiguous or uncertain. To guard against allegations by the employee that the employer made various promises and assurances not embodied in the contract, an integration clause should be included as a standard provision.

8. Remind the employee of the legally binding effect of the employment contract. Every employment contract should end with a statement that the employee acknowledges that he has read the agreement and agrees to abide by its terms. In addition, the contract should state that it is legally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> *Many high-tech firms begin as a small group effort with "technically oriented" personnel who view attorneys as intruders in the firms' technical or business domain. This attitude has led to rude awakenings when, several years into operations, those firms realize they have no formal confidentiality agreements and covenants from their employees not to compete.*

binding and that the employee has the right to consult with legal counsel concerning the contract terms. Such a provision will (i) stress to the employee the importance of the contract and the employer's intent to enforce it and (ii) place the employee on notice that an attorney may be necessary to review the contract.

Executing the contract

Execution of the contract is largely a formal, uncomplicated procedure. The employer, however, should adhere to the following guidelines.

1. Have the employee sign each page and initial important paragraphs of the contract. As a matter of policy, the employee should sign every page and initial all important paragraphs, particularly paragraphs involving confidentiality and nondisclosure agreements and covenants not to compete. This procedure will guard against any allegation that the pages of the contract were replaced. In addition, it will highlight significant clauses of the contract, thereby undercutting any claim by the employee that he did not read or was told to ignore certain important paragraphs.

2. Be careful with employment contracts with existing employees. Many high-tech firms begin as a small group efforts with "technically oriented" personnel who view attorneys as intruders in the firms' technical or business domain. This attitude has led to rude awakenings when, several years into operations, those firms realize they have no formal confidentiality agreements and covenants from their employees not to compete. The prime objective then becomes to secure such agreements at the least possible cost.

Before executing employment contracts with an existing employee, the firm should consult with legal counsel to determine whether the governing law requires that additional consideration be provided to the employee. Consideration is, in effect, something of value given in exchange for a promise. For a prospective employee, the consideration is that he will be employed and will receive a given salary and certain benefits in exchange for signing the contract and agreeing to be bound by its terms.

An existing employee who executes an employment contract, however, already has a job. Some jurisdictions have held that continued employment alone is not adequate consideration for an existing employee who is required to sign an employment contract containing restrictive covenants.

If an employment contract with an existing employee is governed by a jurisdiction that requires additional consideration, the employer should provide some benefit to the employee in exchange for his signing the contract. The benefit could be a small cash bonus, a salary increase or a job change. To ensure that no additional sums are spent, the firm could require existing employees to execute contracts prior to annual salary adjustments and treat the increase in salary as consideration for the contract.

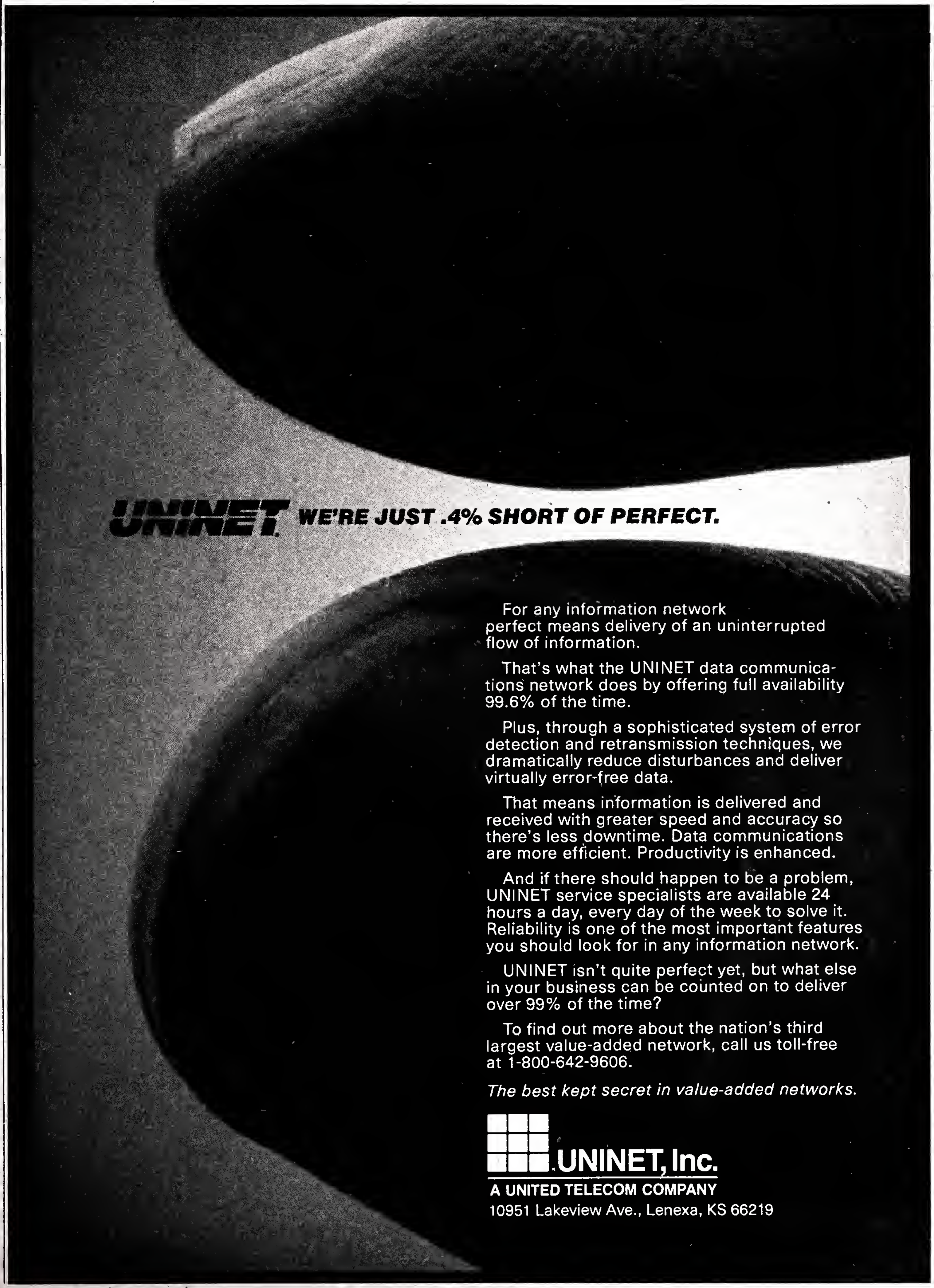
Enforcing the contract

Most employees will abide by the restrictions in their employment contracts. In some instances, however, the firm will be required to enforce its contracts to ensure compliance by its employees. In this regard, a firm must be willing to take legal action when necessary and to implement certain in-house procedures to protect its interests.

1. Make sure the departing employee submits to an exit interview. Whenever an employee terminates his employment, an exit interview should be held to remind the employee of his obligations under the contract. Specifically, the interview should stress the importance of maintaining the firm's confidential information and trade secrets and should remind the employee of any covenants not to compete against the employer.

The employer also should require the departing employee to execute a termination agreement acknowledging obligations and restrictions set forth in the employment contract. Naturally, an employee's unwillingness to sign such an agreement will cast serious doubt as to whether the he will preserve the employer's trade secrets and otherwise comply with the employment contract.

2. Establish in-house policies regarding the use and disclosure of trade secrets. As discussed above, trade-secret protection for business information is available only if the employer makes efforts to maintain such information as secret. Accord-



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ingly, the firm must implement stringent security procedures and monitor compliance with such procedures. The following suggestions may be helpful to the firm seeking to maintain the confidentiality of its business secrets:

(i) Limit access to computer programs and proprietary business data on a "need-to-know" basis.

(ii) Limit access to sensitive areas to approved personnel only. Keep such areas segregated and locked securely.

(iii) Institute proper sign-out procedures in tape libraries. Restrict access to such libraries to designated individuals.

(iv) Place terminals with access to confidential data in segregated and safe areas. Use passwords or keys to limit access to highly sensitive files. Make sure passwords and keys are changed periodically.

(v) Monitor all copying of software, manuals and other confidential documents.

(vi) Dispose of paper, tapes, notes and other trash carefully.

(vii) Periodically instruct all personnel regarding security precautions. Post warning signs and security notices when appropriate.

(viii) Exclude all terminated employees from access to confidential data. If an employee leaves on bad terms, take further precautions such as changing terminal passwords and keys.

(ix) Label all confidential information as "SECRET AND CONFIDENTIAL." Each page of proprietary computer printouts should also be labeled confidential.

(x) Instruct employees not to leave confidential data unattended.

(xi) Monitor and review all speeches and publications to ensure that employees do not divulge trade secrets and confidential data.

(xii) Periodically review the security program in effect at the firm.

3. Remember that covenants not to compete provide only limited protection. The firm should realize that covenants not to compete do not provide unlimited protection against former employees. Indeed, the courts have placed various restrictions on the enforceability of such covenants. As discussed earlier, some courts require the employer to give additional consideration to an existing employee who agrees not to compete against the employer. In addition, covenants that place unduly restrictive limitations as to subject matter, geographic area or time will not be enforced.

Courts either will revise such covenants so as to protect equitably the interests of both the employer and employee or will strike the covenants in their entirety. Accordingly, the employer is well advised not to be overly greedy in efforts to restrict an employee's job mobility.

Finally, in some jurisdictions, all covenants not to compete are deemed to be void as a matter of public policy. The employer should therefore consult legal counsel to determine the law.

4. Be willing to enforce employment contracts to let the employees know you mean business. The firm should be willing and able to enforce its employment contracts for two reasons. First, active enforcement will alert other employees that their employer fully intends to hold them to their employment contracts. Second, selective enforcement or nonenforcement of restrictive covenants may undermine their effect. A court may conclude that the employer is not entitled to protection since other employees were allowed to violate their restrictive covenants. The employer should therefore initiate a policy of regularly enforcing restrictive covenants.

Only when a firm follows proper procedures in negotiating, drafting, executing and enforcing its employment contracts will it receive the necessary protection under law.

About the Author

Tobey Marzouk is an attorney with the law firm of Spriggs, Bode & Hollingsworth in Washington, D.C., where he specializes in computer law and federal court litigation. He serves on the board of advisers of the Computer Law Reporter.

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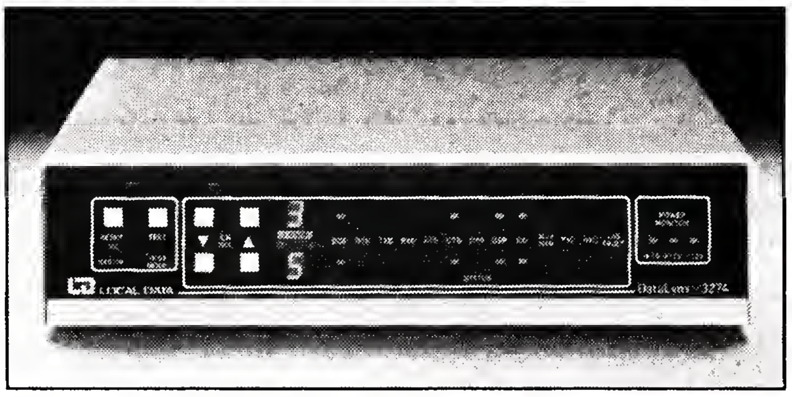

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IN DEPTH

The law of the industry, 1984

The number of computer-related lawsuits jumped dramatically in 1983, and most were overlooked by the national press. Yet their outcomes mean much to the vendor and user communities as well as their attorneys.

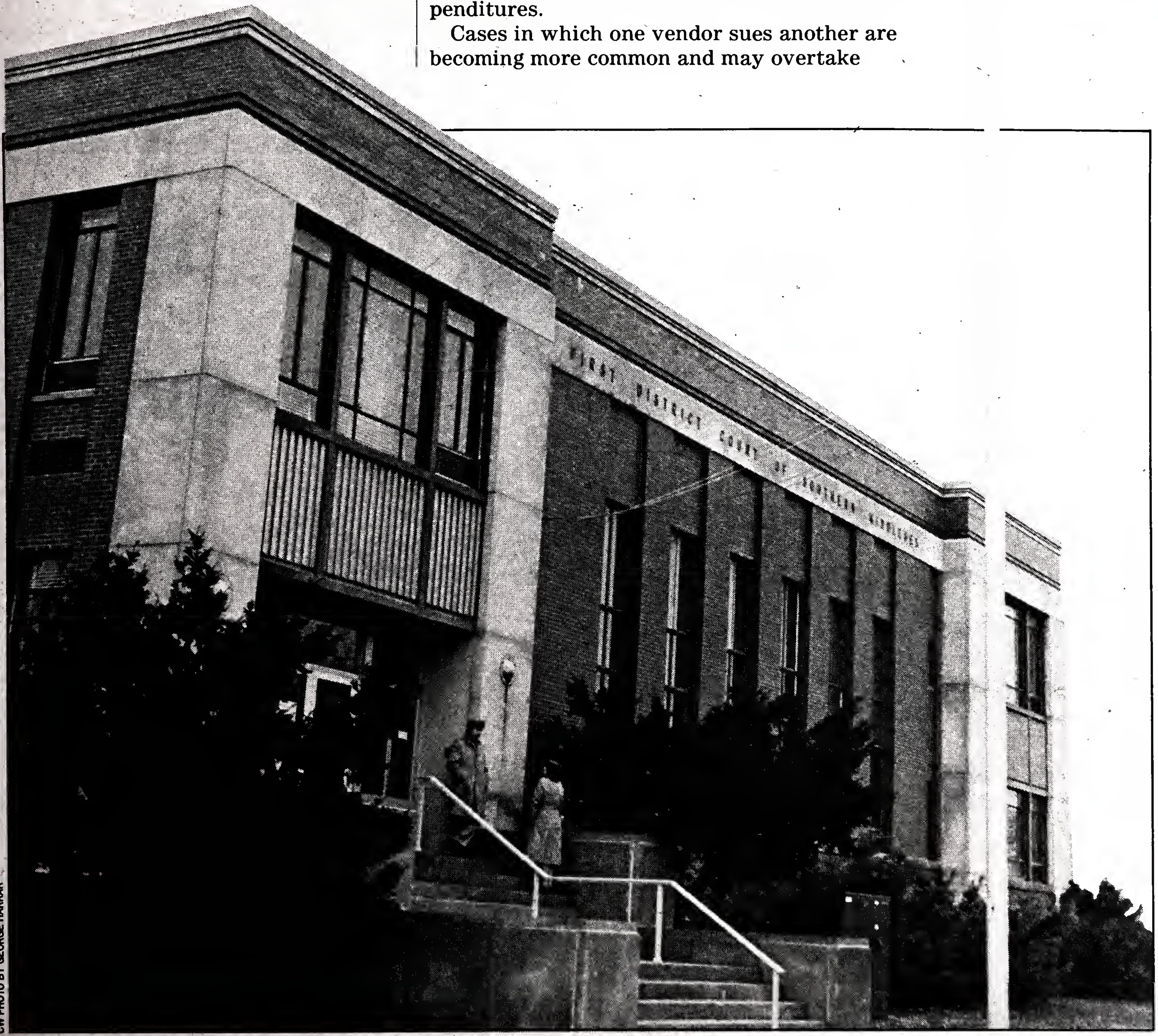
By Richard Raysman

The more well-known computer-related lawsuits of recent years have been analyzed at length — Glovatorium vs. NCR Corp., a user/vendor case; Apple Computer, Inc. vs. Franklin Computer Corp., a test of software copyright protection; and Computer Systems Engineering, Inc. vs. Qantel Corp., a distributor/vendor dispute.

But many other legal decisions in the industry were overlooked by the national press in the past year. The dollar amounts involved may have been relatively small or the trial locations far from the legal limelight of New York, California, Illinois and Washington, D.C. Nevertheless, these decisions can set precedents, thus influencing the way companies must do business.

The most common computer-related lawsuits involve a dissatisfied user filing suit against a vendor. The frequency of such suits has increased along with industry expansion and systems expenditures.

Cases in which one vendor sues another are becoming more common and may overtake



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Honeywell computers help Trailways move over 20 million people a year at the touch of a button.

Trailways faced a challenge recently. They wanted to improve cash management, the accuracy of pricing and scheduling, and the efficiency of their terminal operations.

So they came to Honeywell, and together we worked out a solution based on our microSystem 6/10. Now, at the touch of a button, ticket agents can see schedules, routes and rates for thousands of Trailways' destinations. The possibility of error is all but eliminated. The system even prints the tickets automatically.

Trailways' managers will benefit by having faster access to data. For example, the system facilitates interline accounting and furnishes feedback on marketing campaigns—a critical edge in a newly deregulated environment.

What's more, the microSystem 6/10 is easy to use, easy to program, and compatible with the Honeywell minicomputer and mainframe host at Trailways' home office. (Only Honeywell has total instructional set compatibility for micros, minis and mainframes.)

The microSystem 6/10 has 512K of memory. More than enough to handle the vast amounts of rate/schedule data Trailways must store, as well as information on daily transactions.

And the system is a snap to install, reliable, and backed up by Honeywell's nationwide service organization.

Information control. That's what keeps Big Red rolling.

For more information on the microSystem 6/10 and the advantages of full-line compatibility, call 800-328-5111, ext. 2708 (In Minnesota, call collect 612-870-2142, ext. 2708) or write Honeywell Inquiry Center, 200 Smith Street (MS 440), Waltham, MA 02154.

Together, we can find the answers.

Honeywell

user/vendor lawsuits in importance. Usually, more money is involved in vendor/vendor litigation, and a small vendor's business may be at stake. A user typically sues a vendor over a specific transaction. Its business may also be at risk in cases where it must endure extreme delays or systems malfunctions resulting from actions of the vendor.

The lawsuit of Burroughs Corp. vs. Century Steel, Inc. is a good example of the troubles that can occur when a buyer of computer goods and services negotiates with the primary manufacturer but then finances the purchase of the equipment through a third-party leasing company. If difficulties subsequently transpire, the primary manufacturer will often claim that there was no "privity" of contract.

Without privity of contract, the primary manufacturer takes the position that the purchaser had no direct contractual relationship with the primary manufacturer, and therefore the primary manufacturer has no legal obligation toward the purchaser. If the legal concept of privity of contract is upheld by the courts, the primary manufacturer effectively insulates itself from legal obligations in any situation where a computer purchaser has financed the equipment through a third-party lessor.

Century Steel negotiated the purchase from Burroughs of a minicomputer and accompanying software. Burroughs agreed to deliver and install a workable software system to Century Steel. Since the buyer required financing, it negotiated a lease of the equipment for 60 months from a leasing company. In less than a year after the lease agreement was signed, it became apparent that Burroughs was unable to install the computer and software. Century Steel thus moved the Burroughs equipment out of its office to a warehouse and had another installed.

Subsequently, the leasing company filed a lawsuit against Century Steel for nonpayment of rent. Century Steel then cross-claimed against Burroughs, setting forth the legal position that if the leasing company were successful in its complaint against Century Steel, then Burroughs should be responsible for paying the judgment to the leasing company.

If the legal concept of privity of contract is upheld by the courts, the primary manufacturer effectively insulates itself from legal obligations in any situation where a computer purchaser has financed the equipment through a third-party lessor.

The trial court's decision, which was subsequently upheld in appeals court, determined that Century Steel was entitled to recover from Burroughs all of the rental payments paid by Century Steel to the leasing company.

The legal position of Burroughs, which was not upheld by the court, was that there was no privity of contract between Burroughs and Century Steel. Burroughs claimed that the equipment was sold to the leasing company, which, in turn, leased the equipment to Century Steel, and that Burroughs and Century Steel had no legal relationship. However, there were two equipment sales contracts signed by Burroughs and Century Steel, and those contracts were subsequently sold by Burroughs to the leasing company.

In making its decision, the trial court took into consideration that the leasing company did not make any representations or warranties with respect to the condition of the equipment and did not assume any liability for loss or damage resulting from delays of delivery or installation of the equipment.

Further, in the lease agreement, Century Steel received the benefit of any of the Burroughs warranties with respect to the agreement. The equipment was shipped and installed by Burroughs. Technical employees of Burroughs worked on the installation of the software at Century Steel's location.

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★★★ The Goal News

LOGICAL beats PHYSICAL

For OS/VS

LOGICAL DUMP/RESTORE OFFERS VAST PERFORMANCE GAINS

We are pleased to report that the people who have tried FAVER/XP, the "smart" backup/restore system, are pleasantly surprised at the difference Logical makes.

Most people are used to a physical-design dump & restore system. To backup a single dataset across a number of packs, they have to physically back up each pack. The logical approach of FAVER/XP lets the system back up just the dataset you want, no matter how many volumes it occupies.

You can back up clusters, groups of clusters or an entire catalog this same way. It's much easier with FAVER/XP and everything happens faster.

Plus, FAVER/XP integrity-checks all VSAM datasets for errors before it backs up anything. If it finds anything, you know about it. If everything's OK, the backup runs automatically. You can rest easy that your backups are clean.

Just to be sure, though, you can invoke the COMPARE function to ensure that the backup tape contains exactly the same data as the disk.

FAVER/XP beats IDCAMS

In benchmark tests where an OS/VS installation runs backup & restore routines using IDCAMS and FAVER/XP, FAVER/XP completes the tasks required in half the time.

These figures are taken from actual timings made by product managers at Goal Systems International, the authors of FAVER/XP. They cover 100 product installations spanning five years of operation.

"The difference in speed is due to a systems design that combines the speed of a physical dump/restore with the design philosophy of logical file access," said Theodore Pepper, Chief Developer at Goal.

Users amazed at the difference

When polled by this newspaper, users of FAVER/XP revealed that the Logical approach to backup & restore is genuinely faster, more accurate, and easier to perform.

Ralph T. Bryan, Systems Manager at Turbo Rubber Company said, "Here we had been operating all these years working our tails off just to do an accurate backup & restore. And FAVER/XP comes along and automates the task. It's about time.

"We had depreciated away our investment in our old physical dump/restore system years ago. It was time to buy FAVER/XP. We even ran 'em both for a few months, but now FAVER/XP is our standard."

VSAMAID/XP creates the only complete VSAM dataset management system available today.

Works with VSAMAID/XP for total VSAM management

Goal Systems International has revealed that they have an interface between the FAVER/XP Backup & Restore system and the VSAMAID/XP system which creates the only complete VSAM dataset management system available today.

During backup, the FAVER/XP special interface creates a historical file, which may then be used by VSAMAID/XP to create a "recommendations" report. The report tells resource managers how to manage VSAM datasets for optimum space allocation and resource utilization. VSAMAID/XP recommendations may be implemented with one command through the FAVER/XP Auto-Delete/Define facility.

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The trial court also found that the equipment sales contract that had been signed between Burroughs and Century Steel had not been abandoned or rescinded by mutual agreement and, thus, there was privity of contract between the two. The appeals court recognized that there was substantial evidence and support of the finding that Burroughs failed to deliver properly and install a workable software system.

The award in favor of Century Steel was upheld. But Century Steel had to endure litigation for more than five years.

When third-party financing is involved, a computer user can help to avoid claims of no privity of contract by making sure that there is a signed agreement directly with the primary manufacturer of hardware or the primary supplier of software. Then, if the system is not properly installed, the primary supplier cannot claim at a later date that there was no legal relationship with the end user.

Claims of fraud

Fraud claims have always been a serious threat to computer vendors because of the risk of substantial punitive damages associated with the final award. In Dunn Appraisal vs. Honeywell Information Systems, Inc., a trial with a judge and no jury, the judge awarded not only compensatory damages but also punitive damages plus attorneys' fees. This decision was unusual in that most often, punitive damages are awarded in jury decisions.

Dunn Appraisal was engaged in the automobile damage appraisal business. In 1975, Dunn was using an older Honeywell model computer and desired to upgrade its equipment. Over a period of almost one year, two sales representatives from Honeywell persuaded Dunn executives to upgrade to a newer model Honeywell computer.

One of the principal issues in the discussions between Dunn and Honeywell was that of program conversion. Approximately 400 programs were involved. Honeywell representatives understood that a successful conversion effort would take two to four man-years to complete.

Nevertheless, Honeywell sold the system to Dunn, assuring the company that Honeywell would convert all of the programs at no charge. Although there were 400 programs, the Honeywell representatives specified only 250 programs in the written agreement, assuring Dunn orally that the lower number was inserted simply to satisfy the Honeywell front office and that Honeywell would, in fact, convert all programs.

The trial court found that a relationship of trust and confidence existed between the parties. The Dunn situation is a good example of a fact pattern for a fraud claim: Dunn representatives were relatively unfamiliar with computers and relied primarily on Honeywell representatives for advice and guidance.

The trial court found that almost from the beginning, the conversion project was an "unmitigated disaster." After a period of time, Honeywell informed Dunn that it would not convert all of the programs, only the 250. Dunn was forced to hire an independent contractor to complete the job. Even after the deadlines had passed, Honeywell had not delivered all of its 250 programs. Many that had been delivered were incorrect.

After almost a year of attempting to perform the conversion, Dunn could not use either its old machine or its new one to conduct business. The trial court characterized the conversion effort as a "botched-up mess." Finally, Dunn terminated the agreement.

The trial court found that Honeywell had made material misrepresentations to Dunn in order to induce the company to enter into the contract. The misrepresentations included saying the Honeywell computer was best suited for the Dunn operation, that delivery and installation could be completed within three months and that conversion of the 400 programs could be accomplished with minor modifications and little or no disruption of Dunn's business. Other misrepresentations were that the new computer would improve Dunn's efficiency in serving its customers and that transition to the operation of the new computer could be accomplished without additional formal training or labor costs.

The judge in the trial court awarded Dunn $61,573 in compensatory damages, $30,758 in punitive damages plus attorneys' fees of $24,628. This award was upheld on appeal.

The Dunn result illustrates emerging trends in user/vendor litigation. Punitive damages were awarded and upheld, even though there was no jury involved; attorneys' fees were awarded by the court; and the court allowed compensatory damages for lost executive time. The trial court found numerous items of misrepresentation and good-faith reliance by the purchaser upon false and misleading statements made by the vendor.

Conversely, now that many computer purchasers are becoming more sophisticated in their knowledge, claims of fraud may not be as believable since the users are not relying as significantly on the vendor's representations as they have in the past. Many users are retaining independent consultants. Where users retain competent technical assistance, a fraud claim would be much more difficult for them to prove.

OEM/manufacturer relations

Not infrequently, small OEMs have difficulty entering into volume discount arrangements with primary manufacturers. The manufacturers

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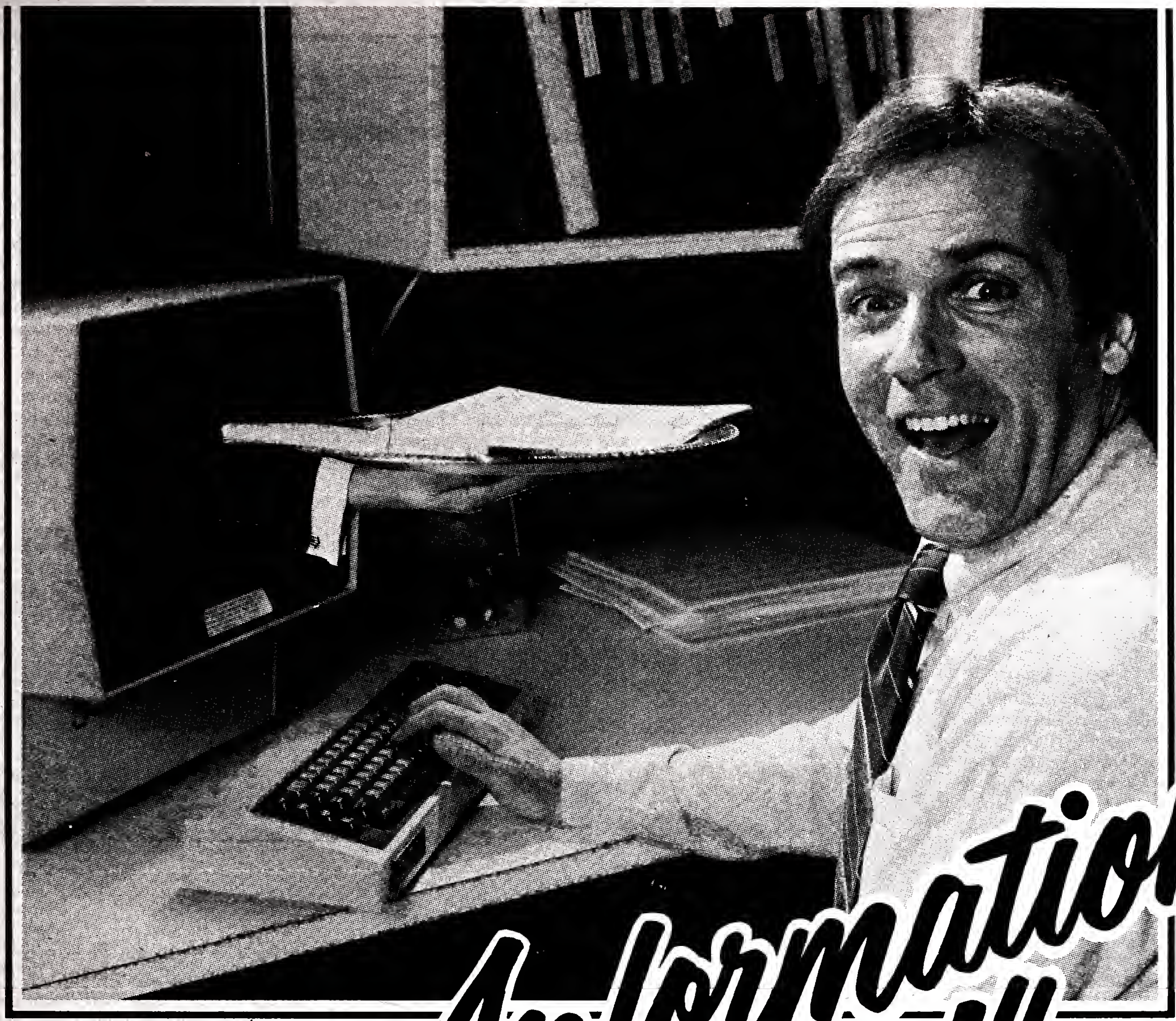

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sometimes are understandably reluctant to become involved with OEMs who may be undercapitalized or poorly managed. As the computer industry continues to mature, manufacturers would rather do business with established OEMs and reduce involvement as much as possible with new ventures. Conversely, small OEMs just starting in business desire the opportunity to enjoy a mutually profitable relationship with the primary manufacturers.

An example of an initial relationship which did not develop amicably between a manufacturer and an OEM is described in the lawsuit Management Assistance, Inc. vs. Computer Dimensions, Inc. vs. Basic Four Corp. Computer Dimensions, a Georgia corporation in the business of designing, manufacturing and marketing computer systems and related components, desired to obtain from Basic Four a multiple system discount contract for the sale of computer systems in a dealership agreement. There were numerous discussions between representatives of Computer Dimensions and Basic Four. The only signed written agreements were purchase agreements where Computer Dimensions agreed to buy certain computer hardware and peripherals from Basic Four. After a dispute arose between Computer Dimensions and Basic Four, there was a subsequent supplemental agreement where Computer Dimensions agreed to pay Basic Four $10,000 in exchange for releasing Basic Four from any liability and delivery by Basic Four to Computer Dimensions of certain computer equipment.

There were also volume discount purchase orders signed by Computer Dimensions but not by Basic Four — thus, not mutually agreed written agreements. Basic Four sued Computer Dimensions for payment, and Computer Dimensions counterclaimed that Basic Four had fraudulently induced it to sign the settlement agreement. Computer Dimensions claimed that Basic Four had given oral assurances that after signing the settlement agreement, Computer Dimensions would become a Basic Four OEM dealer and could immediately start selling the Basic Four systems.

The court held that any reliance by Computer Dimensions on oral representations was unreasonable when the settlement agreement expressly released Basic Four from any liability and that Computer Dimensions was not prevented from reading the contract. The court seemed to take a rather impatient view of the claims by Computer Dimensions that in this vendor/vendor arm's-length negotiation, it was somehow induced to sign an agreement it did not understand. As a result, in a lengthy opinion, the court dismissed the Computer Dimensions claim of fraud.

This lawsuit is a good example of the difficulty that manufacturers and OEMs face in the coming years. OEMs should be careful that they do not rely solely upon oral assurances made by manufacturer representatives. When OEMs enter into bona fide written agreements with the manufacturer, the OEM should be certain to get a fully signed copy of that agreement before marketing the equipment to end users. Conversely, manufacturers, in order to avoid claims of fraud, should avoid letting OEMs think that they have a formal relationship with the manufacturer prior to the signing of a comprehensive written agreement.

> *When third-party financing is involved, a computer user can help to avoid claims of no privity of contract by making sure that there is a signed agreement directly with the primary manufacturer of hardware or the primary supplier of software. Then, if the system is not properly installed, the primary supplier cannot claim at a later date that there was no legal relationship with the end user.*

Video games

The developers of video game cartridges have been fighting vigorously for the last several years to protect their products. Most of the lawsuits have been based upon copyright infringement claims against companies that have developed imitators to such video games as Pac-Man.

One of the more recent video game lawsuits, Atari, Inc. vs. JS&A Group, Inc., involves a dispute other than a game imitation. Atari game cartridges contain a silicon chip with read-only memory (ROM). Atari has copyrighted its video games as audiovisual works.

JS&A is a retailer of electronic products. The lawsuit involves a JS&A new product called Prom Blaster, a device that can duplicate video games. The JS&A advertisement states that "you simply plug in your Atari or Activision in one slot and a blank cartridge in another, press a button and three minutes later, you've created an exact duplicate." The Prom Blaster sells for $119.

JS&A claimed that the Prom Blaster was used primarily as a means of backing up copies of Atari 2600 compatible games. It was Atari's

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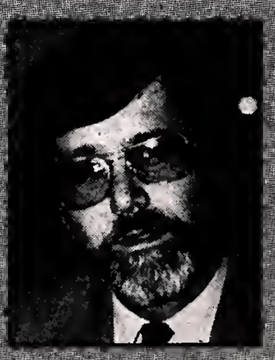

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plus many more!

> *The Consolidated lawsuit is indicative of the serious difficulties that can occur between a manufacturer of computer equipment and its distributors. The maturing computer industry is now experiencing the manufacturer-distributor difficulties long common in other industries.*

contention in the lawsuit that the purpose and effect of the Prom Blaster was actively to induce and materially contribute to making infringing copies of Atari's copyrighted home video games. Atari sought a preliminary injunction to prevent JS&A from selling or distributing the Prom Blaster together with blank cartridges.

The court decided that it was not enough for JS&A to show that the Prom Blaster had a legal use such as backing up cartridges. The court determined that the Prom Blaster machine must have a substantial noninfringing use to avoid granting an injunction against its sale. The court determined that the primary and only substantial use of the Prom Blaster was the duplication of video games developed by companies other than JS&A. Thus, JS&A was likely to be held liable as a contributory infringer.

The court found that the archival argument was not valid since the tapes could only be destroyed by a mechanical or electrical failure but could not be reprogrammed or erased. As a result, the court granted a preliminary injunction in favor of Atari and against JS&A and enjoined JS&A from selling, marketing, distributing or otherwise disposing of the Prom Blaster.

The Atari lawsuit involves a novel approach to copying copyrighted video game programs. This decision is added to the already existing cases that prevent imitators of video games from infringing on copyrighted works.

Distributor, manufacturer

Virtually all computer and peripheral manufacturers currently market at least some of their products through distributors. Since the value of the equipment is often significant, disputes between manufacturers and their distributors are more frequently ending up in the courts.

A 1983 case between a distributor and a computer manufacturer where punitive damages were awarded by the trial court is Consolidated Data Terminals vs. Applied Digital Data Systems. The total award for Consolidated at the trial level was $585,489, which included $500,000 in punitive damages. The Ninth Circuit Court of Appeals reversed most of the award of the lower court including the $500,000 in punitive damages. Nevertheless, this lawsuit is illustrative of the risk to computer manufacturers in dealing with their distributors. It should also be noted that the punitive damage award was granted by a judge and not a jury.

Applied Digital Data Systems (Adds) was a manufacturer of CRT terminals. Consolidated Data Terminals (CDT) was a distributor of the terminals in California. Adds and CDT signed a written distributor agreement making CDT a nonexclusive sales outlet for Adds terminals. Adds promised to accept CDT purchase orders for a fixed price, and CDT promised to use its best efforts to promote Adds' product.

CDT further promised that it would not sell other competitive terminals. Adds subsequently began delivering terminals that did not meet their published specifications in Adds' promotional literature. In particular, the terminals would not operate at the advertised speed of 1,920 char./sec, and as many as 25% of the terminals were totally inoperative upon delivery.

Eventually, CDT bid on an order for 127 terminals to Intel Corp., a terminal user. Adds bid on the same project but came in at a higher price. When Adds discovered the lower CDT price, Adds reduced its asking price and was awarded the final contract to supply the terminals. When CDT learned of this undercutting action by Adds, combined with the technical difficulties of the Adds terminals, CDT terminated its distributor agreement with Adds and entered into distributor agreements with other terminal suppliers.

CDT then filed a lawsuit against Adds alleging breach of contract, breach of an implied covenant of good faith and fair dealing, unlawful interference with prospective business advantage and fraud in the inducement to enter the distributor agreement.

As noted above, the trial court awarded CDT damages on its claims, including a $500,000 punitive damage award based upon Adds' interference with the sale to Intel, the terminal purchaser. The trial court noted that "fraudulent conduct and wrongful interference with CDT's advantageous economic relationship with Intel was in knowing and conscious disregard of CDT's rights and interests." The Court of Appeals reversed all of the award with the exception of $15,000 awarded to CDT in direct, incidental and consequential damages for Adds' breach

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Software: What's Available and How to Find It
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Medical/Dental Applications for the PC
The PC in the Law Office
PC's and Real Estate
Manufacturing Resource Planning with the PC
Investment Software for the PC
CPA Software: The Bottom Line
Software for Insurance Applications
Distributed Control Software for the PC

Thursday, February 2, 1984
User Sessions:

The Anatomy of the IBM PC
Defining Levels of Compatibility Between Systems
Overview of Compatibles: Desktops and Portables
Word Processing Software
Database Management Software
Business Graphics Software
Analyzing Your Software Requirements
Overview of Major Business Applications Software
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Friday, February 3, 1984
User Sessions: The PC in the Corporate Environment

Review of Policy and Planning Issues
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of warranty with respect to the CRT terminals.

Regardless of the outcome of the Consolidated lawsuit, it is indicative of the serious difficulties that can occur between a manufacturer of computer equipment and its distributors. The maturing computer industry is now experiencing the manufacturer-distributor difficulties long common in other industries.

There have been a number of recent lawsuits addressing the issue of adequate protection of confidential technological information. A particularly good example of protection of sophisticated technology for purposes of protecting lead time was set forth in Textron, Inc. vs. Teleoperator Systems Corp. The Textron case dealt with the issue of an independent contractor, sophisticated in industrial robotics technology, providing confidential services for a valuable consideration.

Textron was in the business of making and selling machine tools and became interested in volume production of robots for industrial uses, such as in the automotive industry. Teleoperator had a reputation as an expert in the design of manipulators and robots. As a result of Textron's requirements, Textron and Teleoperator entered into an understanding that Teleoperator would develop an industrial robot designed for the benefit of Textron.

Although there was no formal contract, correspondence between the parties made it clear that Teleoperator would be permitted to utilize the resulting robot design in a noncompetitive manner with respect to Textron. For the design phase, Textron paid more than $800,000 in fees to Teleoperator. After the development effort and in contravention of their basic understanding, Teleoperator claimed the design as its own and indicated an intention to enter into competition with Textron. As a result, Textron brought an action for injunctive relief, which was granted after a four-day hearing.

The court observed that to permit Teleoperator to wrongfully appropriate technology which would thrust it into a competitive position it should not rightfully enjoy would inflict severe damages on Textron. The court further stated that the damage would be inflicted by virtue of a ruinous competition between the parties that their agreement did not contemplate; it was expected that Teleoperator would only be given rights to noncompetitive applications of the sophisticated technology.

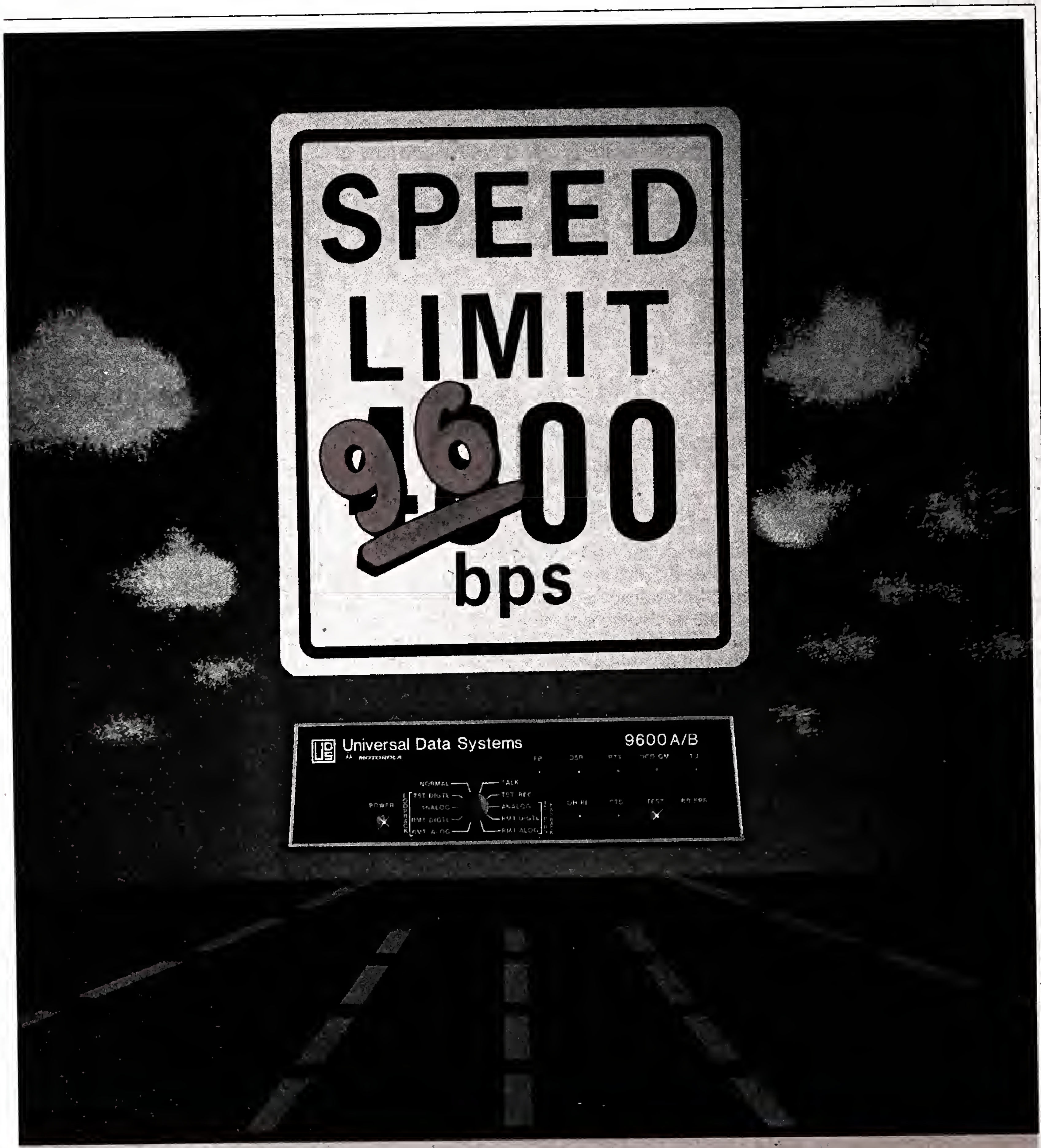
Companies often face difficulty when they must resort to retaining independent contractors to perform sophisticated and highly technological procedures. Having developed the technology, a consultant often wants to market the work to other organizations.

The Textron result shows the difficulties companies face when they must resort to retaining independent contractors to perform sophisticated and highly technological procedures. Once the consultant has developed the technology, it can be expected that he would want to market that technology to other organizations. However, since the purchasing company has spent a great deal of time and money in acquiring the confidential information, it would naturally want to protect the technology and lead time in the marketplace.

About the Author

Richard Raysman, an attorney with the New York City law firm of Brown, Raysman & Millstein, is chairman of the New York State Bar Association Computer Law Subcommittee. He coauthors a monthly column on computer law for the New York Law Journal.

Raysman specializes in contract negotiation, litigation, protection of proprietary rights in software and other computer-related legal areas. He is coauthor of "Don't Rush To Court If Your Computer Fails," which appears in this month's Harvard Business Review.



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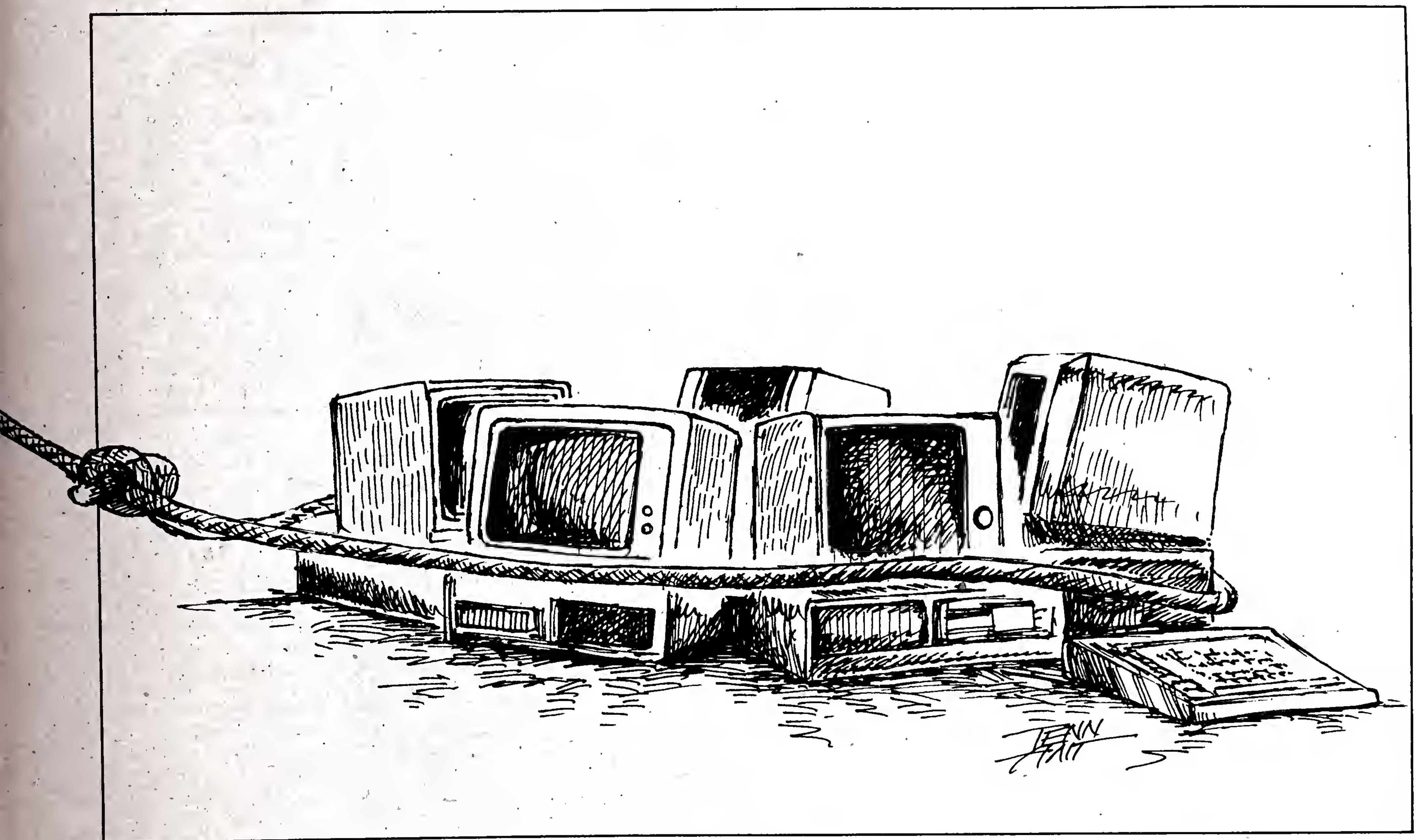

Who's in control here?

By Jack Rahaim

> ***In order for micros to be integrated into the corporation, the DP charter must explicitly state who controls information management as well as the equipment and applications that support it.***

The issue of micros in large organizations starts with the charter (real or perceived) of the DP department. In the past, there was no need to separate the role of information management — defining, processing, transmitting and storing information — from the equipment and applications that supported it. The DP department was the only show in town. Computer equipment was prohibitively expensive and complex for local organizational units or individuals.

But with the price and use barriers gone, suddenly the issue of charter becomes problematic: Who owns information management and who should own the equipment and applications that support information management?

There are a few alternatives for drawing up the DP charter:

- Define the charter to include *both* information management and the equipment.
- Define it as primarily information management and develop standards by which users can access and contribute to the organization's information.
- Be silent or unclear about the DP charter and deal with the issues on an ad hoc basis.

What follows is an attempt to clarify the issue of charter by examining the risks and opportunities that emerge from the use of micros locally.

Risky situation

Many DP professionals, although reluctant to admit it, have had virtually no experience with micros and their applications. They have developed a number of elitist attitudes about the equipment and the ability of users to do anything meaningful with it. The thought of unsophisticated users selecting, installing and applying micros is enough to cause sleepless nights for seasoned DP veterans.

Much has been written about the loss of control that DP suffers when users purchase and operate their own micros. This loss of control includes the risk that micro users will begin pressuring DP for more and better applications using centralized and local data bases, designed with the same type of human interfaces that are currently available in some of the good micro software packages. In addition, users will demand that new applications be developed more quickly and at a lower cost than DP has been able to deliver in

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the past. Micro users generally will not understand the complexity of developing and operating a real-time, multiuser system.

At the other extreme is the risk that users will become permanently turned off to automation because of negative experiences with micros. Clearly, if the user becomes discouraged or threatened by automation, the job of DP becomes significantly more complex.

One of the most common complaints by DP managers in the past is that users lack systems understanding and/or appreciation. This lack of understanding has made it extremely difficult for both DP and the users to share ideas and language relating to business needs and the contribution automation could make.

The proliferation of micros (and good software) could, if managed properly, develop a new constituency of computer-literate users who are better able to articulate their needs and who will have a better understanding of both user and systems issues which emerge during automation. Providing DP department support and expertise to the users as they choose, purchase, install and begin using micros offers the opportunity to develop relationships which will benefit both the user and DP in the future.

The learning center can become the focal point for piloting new applications as well as supplying information and expertise on personal computer issues ranging from how to choose the right computer to how to use one productively on the job.

One excellent way to support users and develop good DP/user relationships is through the learning center. In its basic form, the learning center is a one-stop combination of hardware, software, resource people and instruction designed to introduce new users to the world of micros.

Most successful learning centers, however, gradually migrate into more than just places to learn how to use micros. The learning center can become the focal point for piloting new applications as well as supplying information and expertise on personal computer issues ranging from how to choose the right computer to how to use one productively on the job.

If the learning center is used properly, users will become knowledgeable about different equipment, the capabilities and limitations of each, as well as the applications software available. In addition, the user can be taught the importance of dealing with data consistently and the advantage of being able to share data across applications. At the same time, the DP group will gain insight into the users' needs and the kinds of support that will be required on an ongoing basis.

In this environment, DP can begin to win the cooperation and understanding of users and begin developing the ability to influence users. If DP positions itself as being supportive to micro users, users will naturally look to DP for advice and support. This situation will allow the development of a strategy to give both DP and the users the optimum combination of access and control to data.

If, on the other hand, users perceive DP as standing in their way in terms of mi-

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The new Telstar 3 communications satellite carries solid-state power amplifiers to boost its ability to carry TV, radio, voice, and high-speed data transmission services. Telstar 3, owned and operated by American Telephone and Telegraph Co., is the first Hughes satellite to use solid-state amplifiers. When combined with advanced signal transmission techniques, these devices allow the spacecraft to carry nearly four times as many telephone calls as other satellites in service. Current satellites almost exclusively use traveling-wave tube amplifiers. While these tubes use the satellite's solar-generated power more efficiently, the solid-state amplifiers are more reliable and will last longer.

Approximately 2900 U.S. and foreign patents have been granted to Hughes inventors in the last 15 years. To honor its best and brightest talent, the company each year presents the Lawrence A. Hyland Patent Award to a handful of its outstanding inventors. The award, which includes an honorarium, is named for the company's retired chairman of the board. A leading electronics inventor and radar pioneer, Mr. Hyland was granted nearly 40 patents. Among his earliest was the one for the first shielded spark plug that permitted radio equipment to be used effectively aboard aircraft. To date 104 inventors have received the Hyland award.

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cro use in order to preserve DP's historical turf, the user will resist any attempts by DP to be involved with the issue of micros.

DP departments will not have many opportunities to develop strong relationships with users. The way in which DP assumes a leadership position (as opposed to an autocratic one) will determine the success or failure of both the users and DP. It is strongly recommended that a strategy be developed to provide strong DP support and leadership for the user. Do it now or run the risk of losing the users as allies.

The equipment

The approach most users are being advised to follow is:

- Decide what you want to do with the computer.
- Choose the software that will allow you to do what you want.
- Choose the hardware that will best run the software you have chosen.

Although this approach appears valid, it assumes that the user will be using the equipment in a stand-alone or stovepiped environment as opposed to an integrated work environment. Many micros were designed to be used as stand-alone applications machines. The reality of business, however, requires that information be shared and commonly understood.

It should be the role of DP to provide the expertise to assist users in choosing equipment that will satisfy their individual needs *and* integrate local (individual) applications with department-level data and applications and ultimately with corporatewide data and applications. As individual users, they will need the ability to integrate data between applications (data base to spreadsheet to word processing and graphics, for example).

Admittedly, most users will not understand the importance of this integrative approach. If they do not, credibility and influence become critical. If DP has positioned itself properly, the user will accept the notion of integration without really understanding it.

The opportunity is clear: to develop standards by which micros are purchased and interconnected. These standards, if handled appropriately, will be perceived as enabling by the users, and the result will be a network of computers that are truly integrated.

The risks are equally clear: If users ignore the need for standards, a Tower of Babel will develop with limited (or no) ability for users to deal with each other's data and applications. At this point, DP will probably take a considerable amount of heat for letting the company "do this to itself."

Road to minis

There are several reasons that the use of micros leads to minicomputers.

In a very short time, the difference between micros and minicomputers will become harder to define. They are rapidly approaching each other in terms of functions, multiuser capabilities and price.

As users begin understanding the value in integrating individual with department and department with corporate for both data and applications, the minicomputer becomes the logical choice at the department level to implement the integration.

It becomes the place where individual and department meet corporate from the point of view of data, applications and standards.

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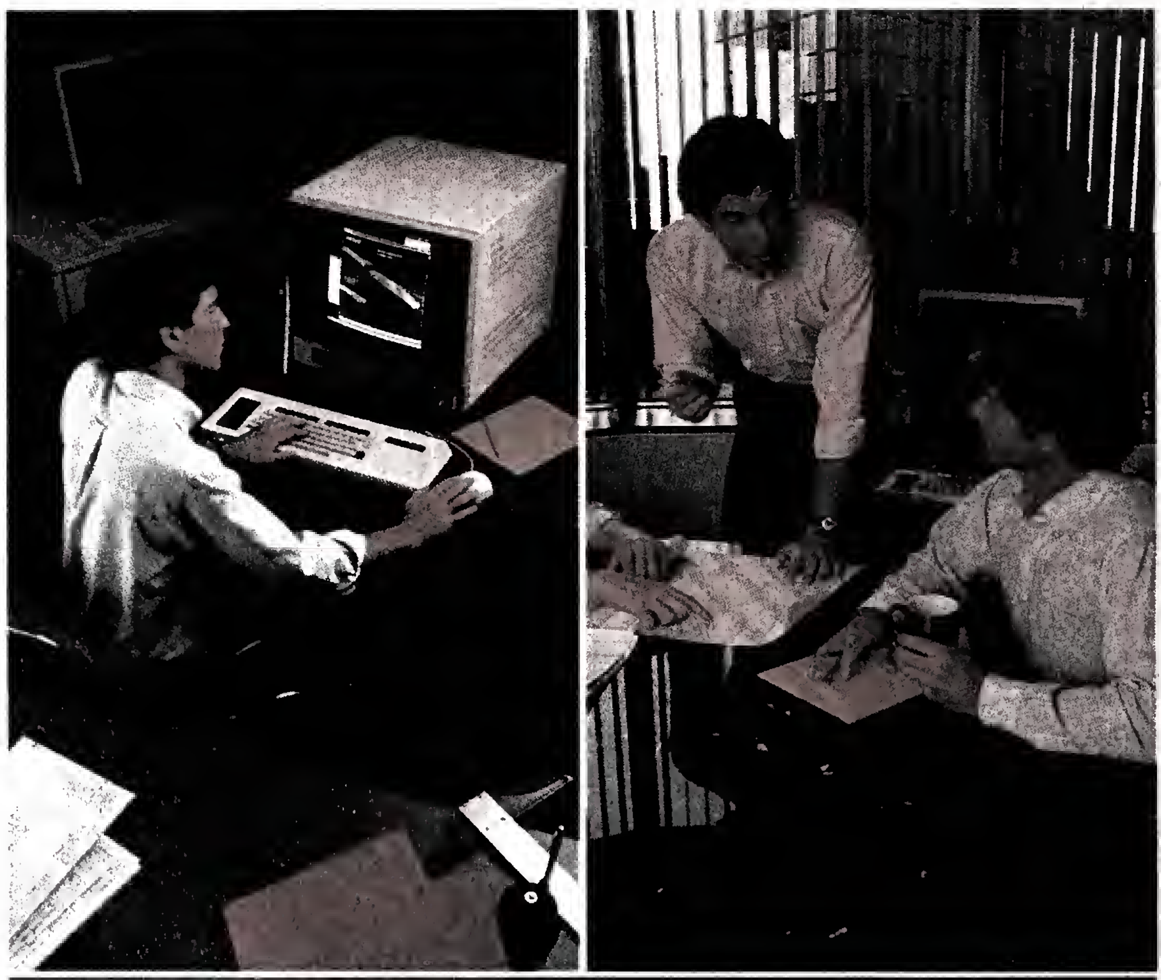

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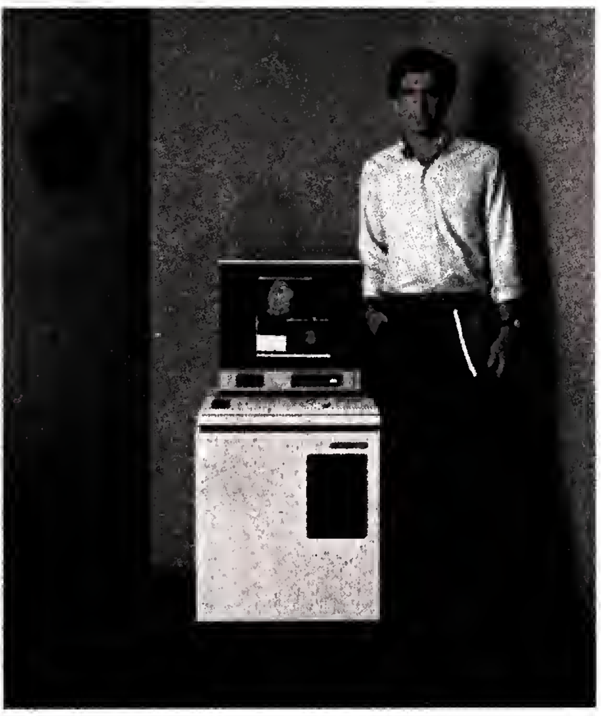

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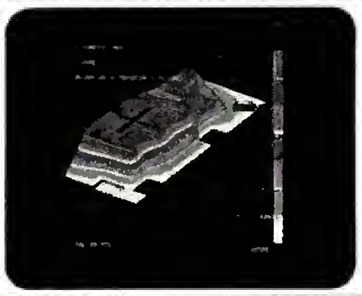
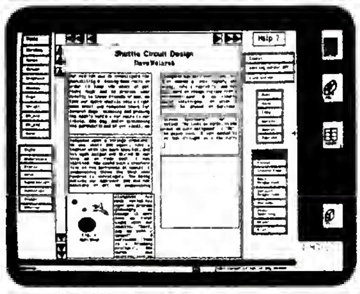
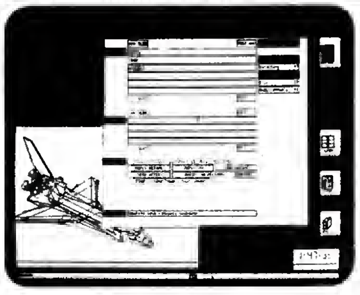
For more information call or write Marketing Services Director, Dept. J1, Apollo Computer, 15 Elizabeth Drive, Chelmsford, Massachusetts 01824 (617) 256-6600, ext. 6608.



The DN 660 and DN 460 can do state-of-the-art Finite Element Analysis at state-of-the-art speed.



They work on documents the way professionals work.



They do Electronic Mail, Filing and Calendar Management.

apollo

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1983 was a very good year.

NCR introduced more major data processing products than any other high tech company.

NCR closes out its first century with one of its most impressive technological achievements, the NCR 9300. It's the first full 32-bit VLSI mainframe designed for business applications. The 9300 delivers the power of a mainframe at the price of a mini.

New computers for 1983 included the UNIX™-based Tower, a microprocessor with the power of traditional minicomputers. NCR also added new multiprocessors to our top-of-the-line 8600 mainframe series.

We introduced the NCR Personal Computer specifically designed for the business/professional market. It provides dual processor capabilities to enhance performance, and is the first personal computer designed with networking in mind. It can function as an offline computer, an online terminal to your mainframe, or networked with other NCR Personal Computers and other popular PCs.

We strengthened our position as the world's leading supplier of retail point-of-sale terminals by introducing a wide range of new products. Included is a terminal that looks up the prices of over 14,800 items stored in its own internal bubble memory.

Our number one position in automated bank teller machines produced the technology for self-service airline, ski lift and service station terminals. We are the leader in electronic banking networks and electronic funds transfer.

Why did NCR introduce all these high technology products in 1983? We wanted to get a good start on our second hundred years. For more information, call 1-800-CALL-NCR. In Ohio, 1-800-543-4470.

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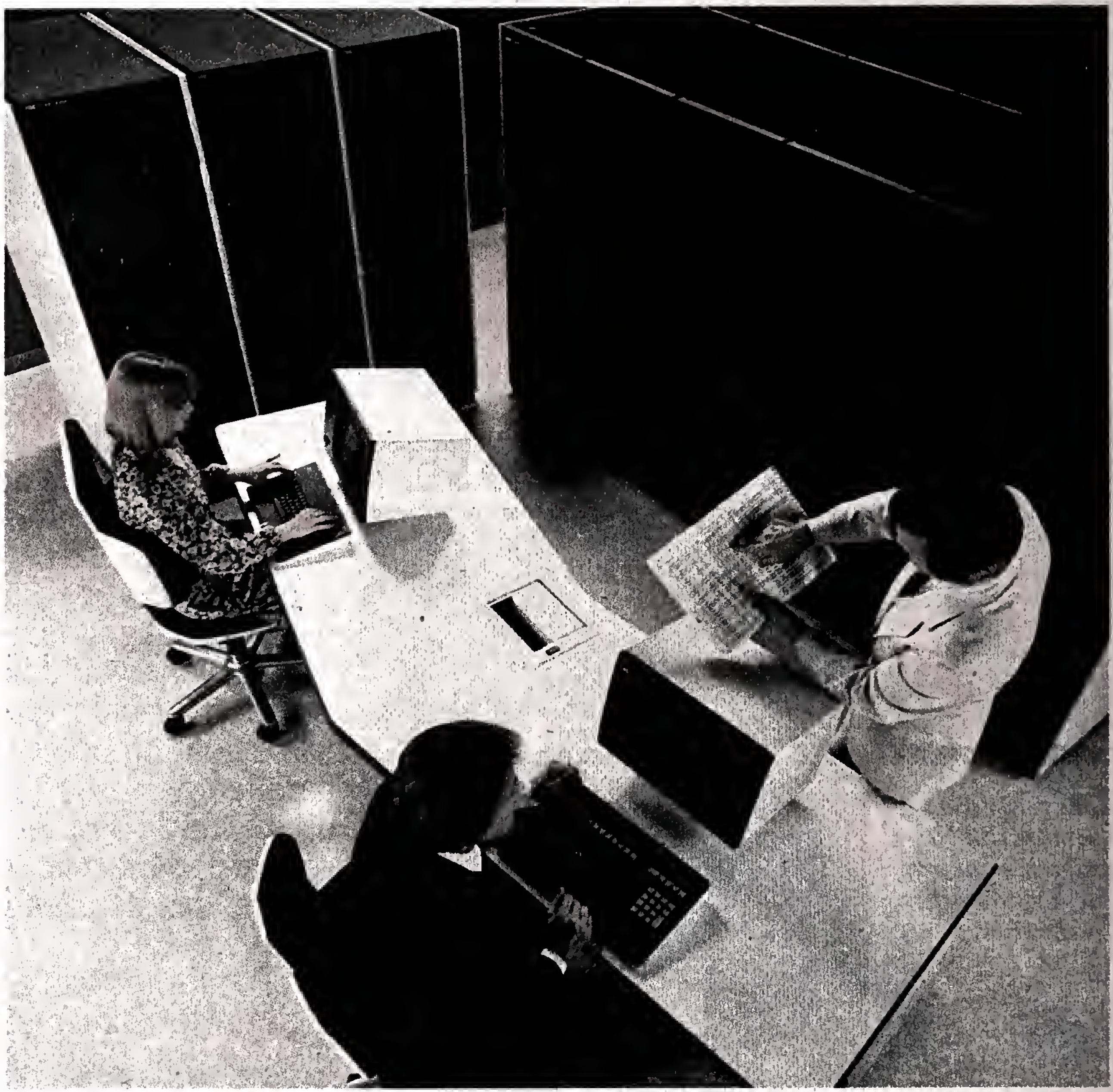

People Express, one of America's fastest-growing airlines, chose an NCR 8600 series computer system to handle online reservations. NCR is a leader in online transaction processing equipment, communications and system software.

The Tower microprocessor packs a lot of computer power in a 29" x 27" x 7" package. Up to 16 operators, local or remote, can access the Tower at one time.

Debit cards and Electronic Funds Transfer became a reality in 1983. NCR is the leader in EFT technology today!

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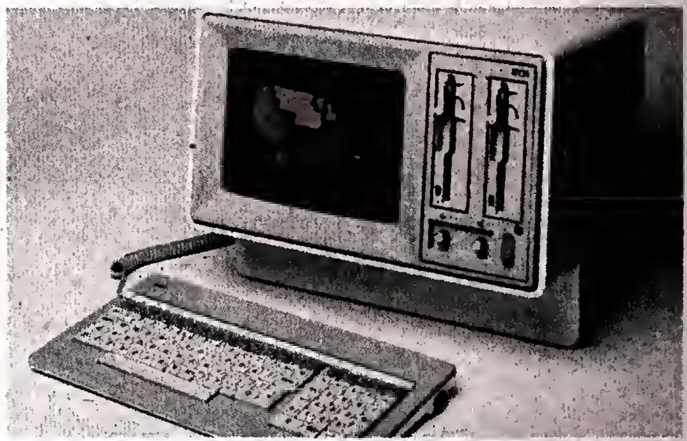
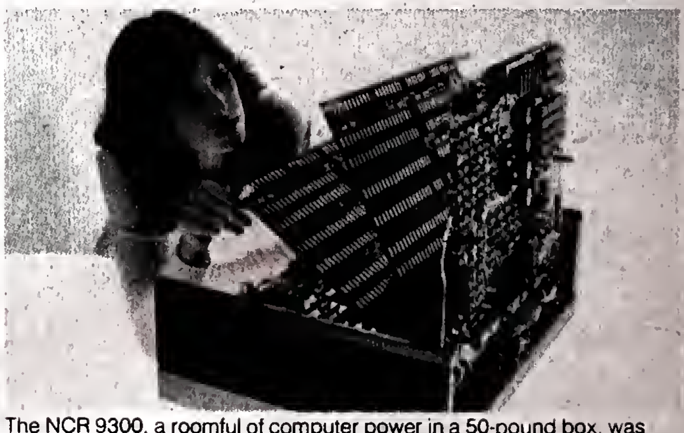


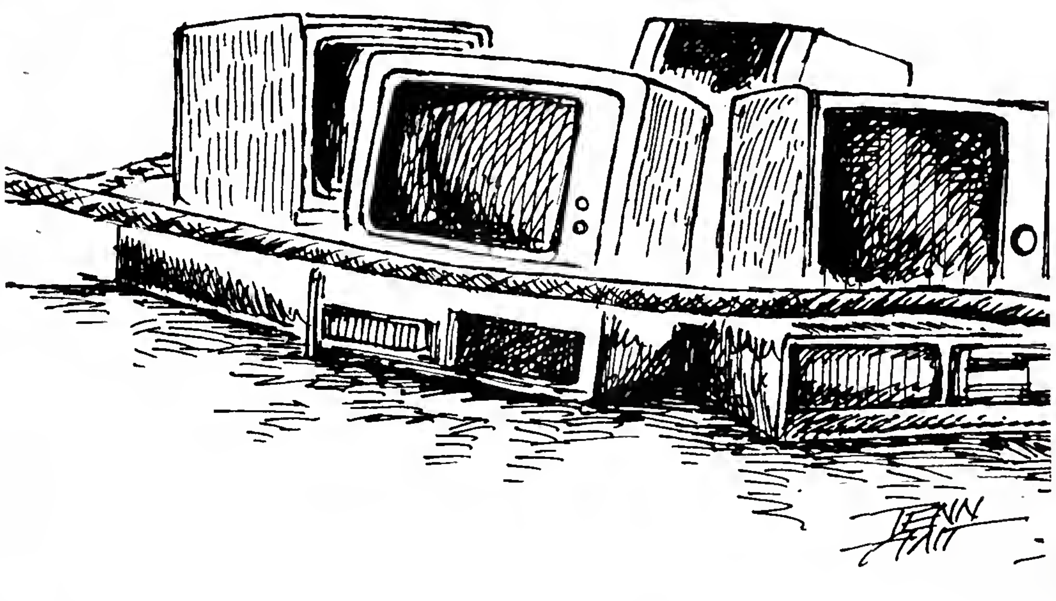
The new NCR Personal Computer offers unsurpassed monochrome or color graphics. Industry standards are used throughout so the applications programs you need are available now.

New drive-through ATMs help the world bank on the go. NCR helped pioneer the regional electronic banking network and has installed more Automated Teller Machines worldwide than any other supplier.



The NCR 9300, a roomful of computer power in a 50-pound box, was a big breakthrough in 1983. Add this 32-bit VLSI mainframe for a complete system price of less than $46,000!

Many managers are philosophically conservative when it comes to sharing data with middle managers and supervisors or across organizational lines. They will have to be convinced that sharing data offers more opportunities for productive use of information than it does risk for abuse.



It is just a matter of time until the new cliche about DP is how they are reacting to the explosion of minicomputers at the departmental level.

The use of minicomputers makes it all the more critical that DP appropriately handle users during the micro explosion. The cost and control implications will be significantly more serious for minicomputers than they are for micros.

Such issues as upward and downward compatibility, record-level security (that is, the ability to allocate by record who is allowed to access and update the data) as well as communications capability need to be understood and worked out early in the process in order to assure integration between the user and the rest of the DP environment.

The architectural considerations concerning distributed data bases, ownership of records, location and integration of applications programs and communications strategies will all become critical as more users demand and expect access to their data.

The data

Perhaps the first place where users and DP will understand the implications of systems integration will be in the area of data. Access, security, quality, integrity and synchronization of data will determine the success or failure of DP's strategy for dealing with microcomputers.

For many organizations, the issues of data base management have been few and fairly easy to manage so far. A finite number of data bases were managed and controlled by very few technocrats. Suddenly the concept of data access for multiple users opens a rat's nest of problems:

Data definitions: If users are to share data across organizations, systems and applications, a data dictionary approach will be required to manage the process. The data dictionary will need to contain data elements, who owns (and therefore updates) those elements, the commonly accepted definition(s) for those elements, the business rules and edits that apply, where they are used and in what environments (nodes, machines and so on) the elements are required. Without this commonality of understanding about data elements, there is little or no hope of ever being able to integrate data needs.

Data security: Users will quickly become unhappy with having to reenter data that exists somewhere else in the organization.

Depending on the nature of the data, the security issues may in fact impede true data integration until organizational privacy issues are resolved. Many managers are philosophically conservative when it comes to sharing data with middle managers and supervisors or across organizational lines. They will have to be convinced that sharing data offers more opportunities for productive use of information than it does risk for abuse.

Once the organizational issues are resolved, the technical issues regarding access and update will keep the DP department busy for some time.

As mentioned, record-level security is desired for minicomputers to be used in an integrated environment. Managers obviously have a need to access data from numerous data

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> *The user will have to be taught the significance of data and its relationship to time. Clearly, this is one of the more difficult challenges the DP department will face in managing the micro environment.*

bases, and this need can hardly ever be neatly defined by the same groups of records for each application. For example, the view a user may need to have for on-line inventory or indirect labor may not (and probably does not) match the view the user should have for employee data. This variability will cause problems for the data base manager in terms of providing secure data partitions.

Data integrity: Most well-designed microcomputers provide the capability of down-line loading data to local disks. When this happens, it essentially cuts the user loose from the controlled environment that DP has created. And, if not managed properly, it can result in the user's data being terribly out of synch with the rest of the organization.

The other issue of concern is the ability for more than one user to update data.

The only safe way to deal with both of these issues is through control: controlling the data base so that it is always in synch with itself by developing strict update rules about when and how data changes. In some environments, such as payroll/personnel, a weekly view can be used, while in others, such as inventory control, strict update responsibilities will help with the data integrity.

The user will have to be taught the significance of data and its relationship to time. Clearly, this is one of the more difficult challenges that the DP department will face in managing the micro environment.

Administration: For many years, organizations have tried to ignore the relationship between automation and administration. In reality, an organization cannot successfully implement an automated solution to any problem that is not well-defined from an administrative point of view. The processes that users will invoke to do their work will have a major impact on the timeliness and usability of the resultant data.

More than likely, coordinating the administrative processes with the system will require close teamwork between the organizational entities responsible for each. In many cases, this interface will be new. Groups that are not used to working with each other or taking into account each other's needs will now have to learn how to integrate each other's needs. And, of course, automation may offer new opportunities for improving effectiveness and productivity of administrative processes.

The issue of charter appears to resolve itself best when DP plays the role of manager of information as a resource. "Data resource management" is the catchphrase of the day. DP will define what information, with what business rules, operating in what environments and interfacing with what other environments will be developed and supported. Properly communicated and explained to the users, this approach should result in a "win-win" situation for the organization.

About the Author

Jack Rahaim is corporate manager of personnel administration at Digital Equipment Corp. in West Concord, Mass. Prior to joining DEC 3½ years ago, he worked in the building automation field.

Rahaim is also on the adjunct faculties of Worcester Polytechnic Institute and Mount Wachusett Community College in Gardner, Mass.

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SYSTEMS & PERIPHERALS

SIT supermini systems debut

Use multiple microprocessor technology

By Patricia Keefe
CW Staff

SAN DIEGO — Syte Information Technology, Inc. (SIT) has announced its first product, a line of 32-bit networked engineering supermicrocomputer systems said to use multiple microprocessor technology.

Called the Syte Series 3000 Micromainframe, the product line reportedly offers the processing power of a mainframe in a desktop system.

"We intend to prove that multiple, tightly coupled microcomputers with state-of-the-art software technology are superior in performance and price to superminis like the [Digital Equipment Corp.] VAX-11/750 and the VAX-11/780 and low-end mainframes like the IBM 4300 series," Peter J. Shaw, president and chief executive officer at SIT, said.

'Virtual environment'

The Series 3000 Global Environment Manager (GEM) proprietary software reportedly allows the supermicros to run multiple operating systems on the same processor at the same time (with a multiple-window display), permitting the simultaneous use of applications software written for different operating systems, a capability that the vendor claims is an industry first. GEM creates a "virtual environment" giving each user access to the computing power of other stations, as well as to all other resources on the network, including peripherals, according to the spokesman.

The proprietary window-management software in the 3000 series allows vector graphics, bit-mapped graphics and interactive alphanumeric text within an unlimited number of windows on the display screen. In addition, software transportability is ensured among all Series 3000 models. Fortran, Pascal and C languages are available for the system, as is SIT's proprietary version of AT&T's System V, a version of Bell Laboratories, Inc.'s Unix operating system.

Each model in the 3000 series reportedly can perform floating-point calculations as fast as a VAX-11/750 for computer-aided engineering and design, and can also be used for word processing, data processing and other applications.

The Series 3000 proprietary multiple microprocessor hardware also provides performance enhancements such as paging, the vendor said.

Also, each workstation in the Series 3000 is equipped with a National Semiconductor Corp. NS 16000 series microprocessor and Xerox Corp. Ethernet networking capability. Each CPU is a single board said to include the NS 16032 16/32-bit microprocessor for executing code; an Intel Corp. 80186 microprocessor for direct-memory access, network and disk interfacing; and two Intel 8051 microprocessors — one for communications and another for diagnostic processing. Other features include cache memory, high-speed I/O and an Intel Multibus option.

A stand-alone station can be upgraded to local networking without software modifications, and multiple stations can be hooked together into a distributed network.

Engineering-oriented use

The first of the series, the Model 300, will be released later this month and was designed for use with a number of engineering-oriented applications. It consists of a CPU with 1M byte of memory, expandable to 15M bytes; a keyboard; and a 19-in. monitor in either monochrome or color. The monochrome monitor comes with high-resolution graphics (1,024 by 800 pixels); the color monitor has medium-resolution (640 by 480 by 4) bit-mapped graphics.

The end-user list price for the Model 300 is $21,900 with a monochrome CRT terminal; $24,900 for a system with a color monitor. Both systems include GEM, SIT's proprietary implementation of AT&T's Unix operating system and three programming languages. Further models are planned for the first six months of 1984, ranging in price from less than $20,000 to more than $40,000.

SIT, at 11339 Sorrento Valley Road, San Diego, Calif. 92121.

Fifth generation poses challenge

HARD TALK

TOM HENKEL

The fifth generation, a new class of processing systems which promise users high-speed and artificial intelligence capabilities, appears to be the latest challenge to world computer manufacturers. But while this new class of processors may revolutionize the way the world processes data, it also may alter the freedom computer makers have traditionally been able to exercise in offering products to end users.

Research toward the yet-to-be-developed fifth generation of processors has become the biggest political football ever to hit the high-tech business. It's the U.S. against the Japanese, with many government officials contending the U.S. has to remain on top or risk losing its respectability as a world power.

But the issues involved with fifth-generation systems go beyond the traditional one-upmanship that has traditionally been the driving force among vendors of large computer systems. The R&D money required to build a fifth-generation processor is incredible. New architectures, packaging techniques and circuit substrates must be developed. In addition, much research has to be done to understand the concepts of artificial intelligence and how they can be effectively used in a computer system.

The computer industry has been faced with challenges before, but this one is different. The financial incentives that push vendors and entrepreneurs are not as strong with fifth-generation systems as they are with commercial processing systems. Sure, there is a fertile market waiting to scoop up the first fifth-generation

See **FIFTH** page 64

EMULEX

Emulex Corp. Cuts Prices On Its Line Of Controllers/**62**

Paragon Technology Unveils Model 200 CAD System/**67**

INSIDE

■ IBM-Compatible Matrix, Line Printers From Ampak/**65**

■ Power Supply Out for Small Systems/**67**

■ Memory Expansion Board for Multibus Systems/**67**

■ Security Device Protects Processors, Peripherals/**68**

■ Editing Terminal Gets Full-Page Display/**62**

Sperry terminal adds graphics to UTS 4000 line

BLUE BELL, Pa. — Sperry Corp. has expanded its UTS 4000 family of communications terminals by adding a programmable terminal with color graphics capabilities. The new unit was designed with a wide range of ergonomic features and reportedly can function as a personal computer, using Digital Research, Inc.'s CP/M 68K operating system.

Called the UTS 60, the unit comes with eight standard colors with another eight colors optional. The graphics capabilities can be used either on-line to a Sperry Series 1100 mainframe or in a stand-alone capacity using Sperry's Business Graphics Utility (BGU) package, the vendor said.

On-line graphics are provided as part of the Sperry Mapper applications development software. Hard copies can be obtained on any of three optional printers. When operating in a stand-alone capacity, the Dot Graphics Feature can be added for drawing lines, polygons, arcs, sectors, rectangles and circles in any of 16 colors. It is said to deliver 51 dot/in. both horizontally and vertically and runs in conjunction with BGU.

SPERRY

The UTS 60 features the 16/32-bit Motorola, Inc. 68000 microprocessor as its CPU and Zilog, Inc.'s Z80 as a secondary processor to control peripherals and the video section of the system. Other features include a low-profile keyboard; improved focus; a standard memory of 128K bytes, expandable to 2M bytes of error-correcting code memory; a CRT with a 14½-in. diagonal screen providing 80 char./line width; and data transmission at up to 9,600 bit/sec.

Several optional program products are available for the UTS 60 for a one-time fee. These include an edit processor ($1,080), a file-transfer utility ($1,200), diskette file utility ($600), BGU ($2,820), UTS Cobol ($3,990) and a character set utility ($1,200).

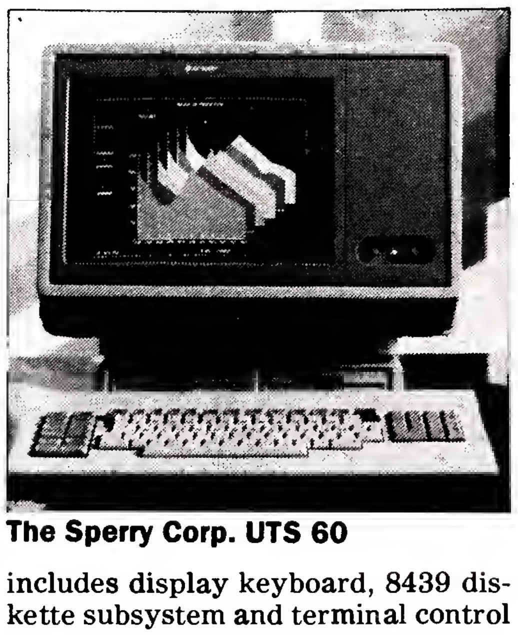
Two other utilities — the TTY Communications Utility ($50) and the Uniscope Communications Utility ($50) — are available for the CP/M 68K operating system.

Optional peripherals

Optional peripherals for the UTS 60 include the Model 31 correspondence-quality printer ($2,025, plus $30/year for maintenance); the Model 25 matrix character printer ($1,275, plus $38/year for maintenance); the Model 35 matrix printer with optional color and graphics features ($3,900, plus $40/year maintenance); and the Model 8441 mass storage subsystem ($3,940, plus $40/year maintenance).

The UTS 60 costs $5,668, which includes display keyboard, 8439 diskette subsystem and terminal control program, according to the vendor. Maintenance for the UTS 60 is $47/mo.

Sperry, P.O. Box 500, Blue Bell, Pa. 19424.



The Sperry Corp. UTS 60

TURNKEY SYSTEMS

ANN ARBOR TERMINALS, INC.

Guru

Ann Arbor Terminals, Inc. recently announced a full-page-display model of its Guru text editing terminals with 28K bytes of display memory, a user-definable display of up to 66 lines of 170 col. and memory of as many as 250 lines of up to 255 col.

The portrait-display Guru includes a variety of editing commands, including erase character, area, field, line and display; insert or delete character or line; push or pop line; insertion and replacement modes; and set editing extent, a company spokesman said.

A "zoom" feature reportedly allows users at a keyboard to move data on or off the screen for trade-off in character size and amount of data displayed. The terminal memory can be bidirectionally scrolled through as one large file or divided into software-defined pages, the spokesman said.

According to the company, the portrait-display option features a 15-in. CRT housed vertically to give the display the appearance of an 8½- by 11-in. page, and a Digital Equipment Corp. mode option permits the Guru to be used with standard DEC VT100 and VT52 terminal software.

The portrait-display model is priced the same as the standard Guru model at $2,395; delivery takes 30 days.

Ann Arbor Terminals, 6175 Jackson Road, Ann Arbor, Mich. 48103.

PROCESSORS

SIGNAL PROCESSING SYSTEMS, INC.

SPS-1000

Signal Processing Systems, Inc. (SPSI) has unveiled a data flow multiprocessor said to interface multiple processors and I/O devices through a smart memory. It also provides an overall control structure for high-speed, real-time applications, the vendor said.

Programmed in Fortran, the SPS-1000's smart memory acts as an address-generating processor to store and retrieve data and control streams for up to 15 attached processors. Byte-sliced and available in 8-, 16-, 24- and 32-bit configurations, the SPS-1000 reportedly can achieve computation rates to 1G operation/sec.

The SPS-1000 data flow processor, including block diagram compiler, is priced from $70,000, depending upon configuration.

SPSI, 223 Crescent St., Waltham, Mass. 02154.

AUTOCONTROL, INC.

Autolan

Autocontrol, Inc. recently announced a multiuser computer system that uses the Intel Corp. 8085 microprocessor and that reportedly allows a network of up to 255 addressable workstations.

Each workstation in the Autolan system may access disks and printers on all other workstations or may have its own disk storage system and printer, a company spokesman said.

Using a transmission rate of 848K bit/sec, the system allows disk space to be shared or assigned exclusively as needed, the spokesman said.

A basic system includes a Kadak, Inc. AMX processor with 80K bytes of memory, 10M-byte hard disk drive, 5¼-in. double-sided floppy disk drive with 770K bytes of storage, two serial ports and Autolan software in programmable read-only memory. The basic system is priced at $4,395, with additional workstations available for $1,795 each.

Autocontrol, 11400 Dorsett Road, St. Louis, Mo. 63043.

DATA STORAGE

EMULEX CORP.

Controller price cuts

Emulex Corp. has reduced prices on a number of its disk and tape controllers for Digital Equipment Corp.'s Q-bus.

With savings ranging as high as 33%, the following models are included in the new pricing structure:

■ The SC02 small/medium disk controller for use with DEC LSI-11 through LSI-11/23 Plus series of Q-bus computers. List price has been decreased 33%, or from $2,200 to $1,500/unit.

■ The SC03 large disk controller for the Q-bus operating on the LSI-11/23 Plus. List price has been reduced 29%, or from $2,800 to $2,000.

■ The TC02 tape coupler. List price has been reduced 33%, or from $1,800 to $1,200.

■ The UC01 emulating host adapter. List price has been reduced 21%, or from $1,900 to $1,500/unit.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

TERMINALS

TELERAY, INC.

Model 72

Teleray, Inc. has announced an emulating terminal that is said to be fully software-compatible with both Digital Equipment Corp.'s VT102 and Data General Corp.'s D200 terminals. The Model 72 was developed to provide a single terminal for installations that run both DEC and DG CPUs, the vendor said.

Either of the Model 72's resident emulations can be called from its VT102/D200-compatible keyboard. Also, 32 (64, shifted) of its keys reportedly can be defined, with up to 8-char. sequences, to meet specific applications needs or user preferences.

The Model 72's two- (optionally four-) page display memory, either volatile or nonvolatile, can be reformatted by the user or processor to accommodate spreadsheets, tab listings or text, varying from a single page of

Continued on page 64

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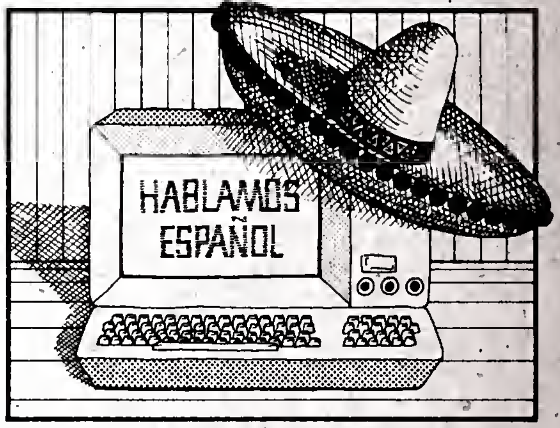

There are currently 15,000 installed computers on 12,000 sites in Mexico. These include mainframes, medium and small computers as well as personal computers. Experts forecast the sale of small, medium and large computers to grow at an average annual increase of 20% during the 1980s, despite Mexico's current economic problems. Minicomputers will be in great demand since they are small, affordable and efficient. U.S. manufacturers have maintained a 80% market share for the past three years with sales of over $182 million. *Computerworld/Mexico* can bring your message to 10,000 key-decision makers in the Mexican computer community. Published on alternate Mondays, *Computerworld/Mexico* covers all the latest developments in hardware, software and terminals in addition to data processing and computer related subjects. Its goal is to provide useful information to data processing professionals throughout Mexico and Central America.

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FIFTH

from page 62

processors, but that market is made up of government agencies, many of which are top secret. There are few, if any, commercial firms waiting for someone to develop a fifth-generation processor.

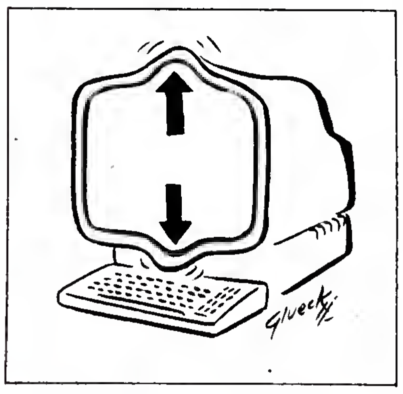
After all, what is the average DP executive going to do with very fast, artificially intelligent processors? The machines are going to be outrageously expensive, and they are not going to do accounts payable and receivable. The powers promised by fifth-generation technology may someday benefit commercial computer users, but initially they will be used to design weapons and manage missile guidance systems.

So guess who is pumping the most money into fifth-generation research projects? Government organizations like the Defense Research Projects Agency, which admits its primary interest in new technologies, particularly those employing artificial intelligence, is to build better defense systems.

Why not let the most likely users of fifth-generation processors foot the bill for their development? In theory that sounds fine. But it also marks a major change in the way U.S. companies do business. The government has always played a big role in pushing technological developments, while at the same time there has always been a separation between government and business. But in the case of fifth-generation technologies, it appears to be orchestrating many projects.

What happens if the lure of government fifth-generation funding becomes more appealing? Will the government, in effect, have control over the computer market? And what happens if the government money suddenly dries up? Not only will lots of researchers be left out in the cold, there will be many research projects which do not offer an immediate application in the commercial sector.

This may account for why many computer makers have steered away from embarking on fifth-generation projects. The investments required are very high, and while there is potential for developing very important commercial products from military projects, the payback appears to be better than 10, possibly 20, years off.



Continued from page 62

255-col. lines to 28 pages of 10-col. lines, or any other line/page combination within memory capacity. Other features include a 256-char. input buffer; two bidirectional, buffered RS-232 ports; five display attributes, seven area qualifiers, 224 displayable characters and a nonvolatile memory function, the vendor said.

Available in three CRT sizes (9, 12 and 15 in.) and three phosphors (white, amber and green), the Model 72 costs $1,535 in the 12-in. model.

Teleray, 6425 Flying Cloud Drive, Eden Prairie, Minn. 55344.

PARADISE SYSTEMS, INC.
Convertible

Paradise Systems, Inc. has introduced the Convertible, a device that converts any Ascii asynchronous terminal into a personal microcomputer.

The Convertible has a built-in 256K-byte random-access memory (RAM) disk that, according to the vendor, delivers up to 10 times the speed of regular microcomputers. The user of Convertible then has access to productivity software available for microcomputers using Digital Research, Inc.'s CP/M operating system, converting data formats from one personal computer to another.

Convertible is repordely able to read 5¼-in. diskettes formatted for a variety of personal computers.

Two RS-232C serial ports and one bidirectional Centronics Data Computer Corp. parallel port enable Convertible to connect to printers and other devices using the standard industry interfaces.

Single-sided, double-den-

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Keith Barlow
Vice President
Data Services
Best Western International

sity disks are standard; double-sided are optional.

Users of the product can download large files from mainframe computers, edit or modify as needed at the terminal and then send the information back in its new form. Transmission rates range from 110 to 19.2K bit/sec, the vendor said.

According to the vendor, the product weighs 8 lb and is the size of a large book.

The Convertible costs approximately $1,000.

Paradise Systems, 150 N. Hill Drive, Brisbane, Calif. 94005.

SAGE COMPUTER TECHNOLOGY, INC.

Terminal; Winchester disk drive

Sage Computer Technology, Inc. has announced an ergonomic terminal available for all Sage microcomputers using a 40M-byte disk drive.

The terminal features a tilt-and-swivel screen with a 12-in., 24- by 80-col. wide, monochromatic (green or amber) high-resolution display. Medium-resolution business graphics are optional. Also included is a detachable alphanumeric keyboard with 96 Ascii character set and a compact 12½- by 16¾-in. footprint.

The 40M-byte, 5¼-in. Winchester disk drive with 256K bytes of random-access memory has been added to the Multiuser Sage IV system. This reportedly doubles previous storage capacity and provides the option of 12M, 18M or 40M bytes of storage. It includes a 64K-byte floppy disk.

The terminal (No. PH0021) costs $590. The Winchester drive with floppy disk (No. SC0044) lists for $10,800, a spokesman said.

Sage Computer Technology, 4905 Energy Way, Reno, Nev. 89502.

PRINTERS/ PLOTTERS

AMPAK BUSINESS SYSTEMS, INC.

ABS 400, 600, 1000 and 1500 band printers; ABS 150, 300, 600 matrix printers

Ampak Business Systems, Inc. (ABS) has announced a line of high-speed band and matrix line printers for IBM processors.

The ABS 400 band printer reportedly emulates an IBM 5225 matrix printer and replaces IBM 5211, 3262 or 5225 printers. It features a 400 line/min typical print rate (64-char. band); near-letter-quality printing; and 48-, 64-, 96-, 128- or 192-char. set capabilities. The unit costs $8,795, the vendor said.

The ABS 600, 1000 and 1500 band printers operate at 600, 1,000 or 1,500 line/min, respectively. They reportedly emulate the IBM 5225 and can be used in place of IBM's 5211, 3262 or 5225 printers.

Other features include operator-interchangeable bands, LED status display, self-test and long-life ribbon cartridge. The ABS 600 costs $9,750, the Model 1000 costs $14,395 and the Model 1500 costs $22,995, the vendor said.

The ABS 150, 300 and 600 (line/min) matrix printers cost $5,195, $7,395 and $9,195, respectively.

Features of this line include IBM 5225 emulation, a 9 by 9 dot matrix with descenders, double-height characters and optional graphics capability, according to the vendor.

Ampak Business Systems, 2640 Walnut, Tustin, Calif. 92680.

DAISY SYSTEMS HOLLAND BV

M20

Daisy Systems Holland BV has announced the M20, a letter-quality printer.

The M20 reportedly features a variety of interface control codes and is compatible with many other printers, including most Diablo Systems, Inc., Qume Corp. and NEC Corp. printers. Also, the units interact with virtually all computer/software combinations, the vendor claimed.

The Daisy M20 was designed for bidirectional printout, reportedly achieving 20 char./sec.

The Daisy M20 is priced at $990, according to a spokesman for the vendor.

Daisy Systems Holland BV, P.O. Box 1010, Torrance, Calif. 90505.

TIS

"TIS™ is truly a remarkable software system. With TIS operating at both the Strategic and Tactical levels of our organization, we now have a sophisticated software system capable of evolving as the needs of the company evolve. As far as I'm concerned, TIS is giving Best Western International the kind of next generation technology we need."

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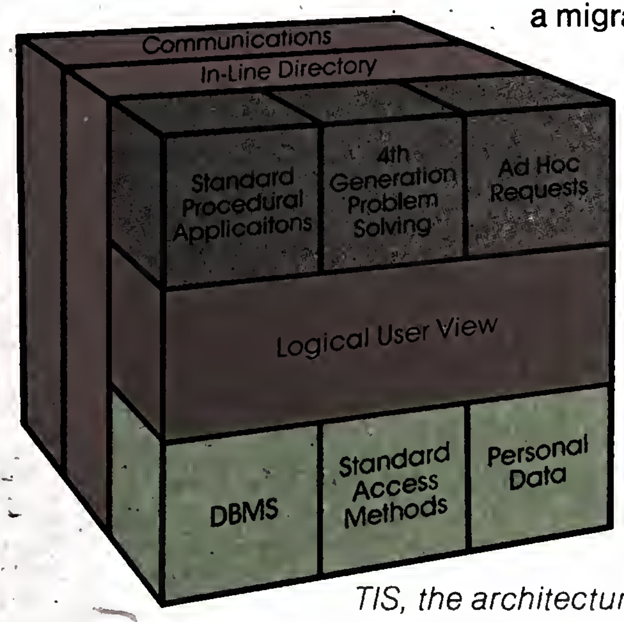

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SYSTEMS & PERIPHERALS

POWER SUPPLIES

BITS POWER SYSTEMS, INC.
Model UPS 200, 400

Bits Power Systems, Inc. has announced two uninterruptible power supplies that it says can be permanently on-line for small system users.

Model UPS 200 and Model UPS 400 are said to provide dedicated, continuous and isolated electrical power by using utility line power to maintain a full charge on internal gel-type batteries.

The units reportedly have visual, audible and remote alarm functions and a standard battery monitor. Standard full-load back-up time is said to be 10 minutes, although external 12-volt batteries may be plugged into the units for extended back-up time, the vendor said.

The Model UPS 200, a 200W unit, is priced at $795. The Model UPS 400, a 400W unit, is priced at $995.

Bits Power Systems, Suite B114, 11020 Audelia Road, Dallas, Texas 75243.

SAFT AMERICA, INC.
AC line conditioner; electromagnetic interference filter; transient voltage surge suppressor

The Electronic Systems Division of Saft America, Inc. has introduced a line conditioner to correct high- and low-output voltages, an electromagnetic interference filter and a surge suppressor for minis and microcomputers.

The Saft AC Line Conditioner reportedly provides power line isolation and regulation while suppressing high-voltage pulse energy and interference noise. It is said to adjust output voltage even if an electrical utility should drop the voltage. It is designed to filter out noise spikes and electromagnetic spikes which could cause the system to lose memory, the vendor said.

The unit is rated at 500Vac and features a 3% harmonic distortion maximum for a resistive load, the vendor said.

The Saft Electromagnetic Interference Filter is said to suppress high-voltage pulse noise and medium- to high-frequency noise. It reportedly has a normal-mode attenuation of 40db-plus and a common-mode attenuation of 35db, the vendor said.

The Saft Transient Voltage Surge Suppressor is said to be a two-stage, high-energy clamping protector for equipment operated off a power line. It is designed for a response time faster than five nsec. It reportedly has a threshold level of 240V, with instant recovery.

All three products are scheduled for late January deliveries. The line conditioner is priced at $395, the interference filter at $39.95 and the surge suppressor at $149.

Saft Electronics Division, 2414 W. 14th St., Tempe, Ariz. 85281.

BOARD-LEVEL DEVICES

ADVANCED MICRO DEVICES, INC.
Am96/5232

Advanced Micro Devices, Inc. recently announced a memory expansion and I/O expansion board said to be compatible with Intel Corp.'s Multibus.

The Am96/5232 provides sockets for up to 256K bytes of erasable programmable read-only memory (Eprom), 128K bytes of random-access memory or 32K bytes of electrically Eprom, a spokesman said. The I/O portion of the board reportedly includes one RS-232C synchronous/asynchronous serial port, a parallel interface with 24 lines, counter/timers, a programmable interrupt controller and a connector permitting customized I/O.

The board can support 8- and 16-bit microprocessors by providing 20- and 24-bit addressing, 8- and 16-bit memory data and 8- and 16-bit I/O addresses. The product is priced at $895.

Advanced Micro Devices, 901 Thompson Place, Sunnyvale, Calif. 94086.

PARAGON TECHNOLOGY CORP.
Paragon Model 200

Paragon Technology Corp. (PTC) has introduced the Paragon Model 200, the second in a family of turnkey color computer-aided design (CAD) systems said to be closely tailored to the needs of printed-circuit board designers.

The multitasking Model 200 uses software developed by PTC's Swiss affiliate, EIE. The system reportedly is built around a 20-MHz Digital Equipment Corp. LSI-11/23 minicomputer with an independent 16-bit proprietary graphics processor. It offers 256K bytes of memory, enabling the user to design complex boards that measure up to 32-in. by 32-in. and contain as many as 500 equivalent integrated circuits and 64 layers.

The interactive Model 200 includes a 19-in., high-resolution 64-color display with pan and zoom features, a 20M-byte Winchester disk drive for archival storage and an 8-in. floppy disk drive, the vendor said. A separate video display console permits data entry and system control, while a desktop printer can be used to produce documents required for manufacturing.

The Model 200, which includes PCD II, printed-circuit design software, a line printer and a factory training course, costs $59,950.

PTC, 2199 Norse Drive, Pleasant Hill, Calif. 94523.

See **BOARD** page 68

COMMUNICATION NETWORKS '84 offers you 100 solutions to your post-divestiture telecommunication problems.

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You may even choose to develop specific skills in one of the nine full-day "In-Depth" seminars. "In-Depth" seminars will be held on January 30, one day prior to the official opening of COMMUNICATION NETWORKS.

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The DEC Rainbow 100+ *The Rainbow 100+ system unit features Z80A and 8088 microprocessors, a 10 MB Winchester hard disk, a dual floppy diskette with 800 KB capacity and sync/async communications, built-in terminal emulator, printer port and 128 KB of system memory.*

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CW

BOARD from page 67

INTERSIL SYSTEMS, INC.
ISB-3430

Intersil Systems, Inc. has announced the addition of the ISB-3430 CRT controller and keyboard/light pen interface card to its STD bus product line.

According to the vendor, the light pen interface can be used in a variety of applications.

The ISB-3430 is an STD bus-compatible card that provides the user with a general-purpose, 80- by 24-char. alphanumeric and character graphics generator, the vendor said.

The board features transistor-to-transistor-level video with separate vertical and horizontal synchronization. A user-programmable, electrically programmable read-only memory for special character generation is also included.

Other features include inverse video, half-intensity and blinking display, hardware scrolling and programmable video parameters. In addition, the card provides an 8-bit parallel input port and strobe, the company said.

The ISB-3430 is available now for $364.

Intersil Systems, 1275 Hammerwood Ave., Sunnyvale, Calif. 94086.

RELIANCE ELECTRIC CO.
Model 45C92

An intelligent memory module designed to provide nonvolatile, off-line program storage for Reliance Electric Co.'s (REC) Automate 15 programmable controller is now available from that vendor.

The Model 45C92 is said to be a memory-duplication storage-and-loading device that allows users to copy, store and load programs from the Automate 15. Off-line programming capability is provided when used with REC's Mini Programmer and Intelligent CRT Programmer, the vendor said.

Also, a 2K-bit by 8-bit nonvolatile memory provides memory storage integrity without the need for battery backup and is large enough to copy any Automate 15 application program, the vendor said. It connects to the Automate 15 and its programming devices via a 25-pin, D-shell connector on their serial communications ports. The Model 45C92 costs $110.

REC, 4900 Lewis Road, Stone Mountain, Ga. 30083.

AUXILIARY EQUIPMENT

CUSTOM SYSTEMS, INC.
BMX-1

Custom Systems, Inc. has announced a disk controller for Data General Corp. users.

Plug-compatible with the burst multiplexer channel on DG minicomputers, the BMX-1 is said to allow users to select any storage module drive-interfaced disk drive for use with the DG S-140, S-280 and MV series of processors.

The BMX-1 has four disk drive connect ports with software-configurable drive characteristics on a port-by-port basis. The unit uses electronically erasable programmable read-only memory technology, which Custom Systems said eliminates the need for switches and makes all functions configurable via downline-loaded software.

The BMX-1 features an onboard 32-bit error-correcting channel for error detection with burst error correction to 11 bits in length.

The BMX-1 controller is priced at $4,995 with quantity discounts available.

Custom Systems, 6850 Shady Oak Road, Eden Prairie, Minn. 55344.

ANCHOR PAD INTERNATIONAL, INC.
Crime Stopper

Anchor Pad International, Inc. (API) has announced a device said to prevent theft of computer time and unauthorized use. Together with the vendor's Security System, it protects the processor and its components from being physically stolen.

Crime Stopper aids security by preventing unauthorized persons from even putting the computer on-line, the vendor said. It can be used either as a stand-alone measure or in conjunction with the Security System. Crime Stopper is similar in concept to a bank's automatic teller machine and is available in two styles — allowing access by key or magnetic card, the vendor said.

Crime Stopper reportedly also controls the processor's monitor disk memory and printer. Other features prohibit thieves from unplugging the hardware. The product also protects equipment from power line surges or high-frequency noises, the vendor said.

Crime Stopper retails for $100 when used as a key-access device or $150 to $300 when used as a card reader. Prices can vary depending on user specifications.

API, 3224 Thatcher Ave., Marina Del Rey, Calif. 90291.

BELDEN/CPD
Power supply cords

Belden/CPD has introduced eight electric power supply cords, each with an Underwriters Laboratory temperature rating of 105 C.

The power cords come in unshielded or shielded models. The shielded models have a Beldfoil shield, a thin layer of aluminum foil bonded to a polyester film.

The cord conductors feature a box-contact design which prevents any molding compound from entering the contact area and results in enhanced electric performance, low temperature rise and additional mechanical strength, according to the vendor.

The cords are two meters in length and have a power rating of 1,250W, 10A and 125V, the vendor said.

The eight cords range in price from $4 to $5.

Belden/CPD, 2000 S. Batavia Ave., Geneva, Ill. 60134.

NATIONAL COMPUTER COMMUNICATIONS CORP.
Rental plan

National Computer Communications Corp., a distributor of microcomputers, CRTs, printers and modems, has announced a rental plan for selected products.

Formerly, the vendor sold products to end users or provided one-, two- or three-year leases. The distributor has introduced a month-to-month rental program said to allow end users to enter an agreement for equipment needed for a minimum of 30 days. Products available under this rental program include the Digital Equipment Corp. LA120, LA12, LA34, LA36 and VT220. Several Racal-Vadic, Inc. modems as well as Texas Instruments, Inc. terminals, Computer Devices, Inc. terminals and teletype terminals are also available.

National Computer Communications, 260 West Ave., Stamford, Conn. 06904.

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MICROCOMPUTERS

Communications lacking in micros

MICRO BITS

THOMAS W MADRON

By Thomas Madron
Special to CW

Microcomputer communications programs abound — unfortunately most of them are inadequate for long-term use in large organizations.

The demands made on microcomputer communications are different for organizations than for individuals, and little of the difference is reflected in the many terminal programs available for almost any currently produced microcomputer. A discrepancy exists between software and hardware manufacturers in the audiences being targeted for micro communications. The perception of software manufacturers is undoubtedly that the primary market for communications programs lies in the personal (read: home) computer market. The major micro manufacturers, however, have clearly targeted large organizations as their primary market.

There also seems to be something of a problem revolving around the computing experiences of those designing microcomputer communications software. Many programmer/analysts seem to have had experience only on micros, or at best, on minis such as Digital Equipment Corp.'s VAX-11/700 series machines. The result of such experience (or inexperience) is a misperception of the needs for communications in large organizations and the production of communications software with an inability to communicate adequately with large IBM or IBM-compatible mainframes.

Most large organizations require some communications with IBM-style systems and many also require communications

See **MICROS** page 70

Turnkey out for Wang micros
Provides access to IBM mainframes

LOWELL, Mass. — Wang Laboratories, Inc. has introduced a turnkey product said to allow its Professional Computer or PIC professional image computer to access instantly an IBM mainframe data base when attached to an IBM 3270 terminal network.

Equipped with the 3278 Emulation Board, a Wang Professional Computer or PIC reportedly becomes an intelligent workstation replacement for a 3278 terminal, while maintaining the ability to operate concurrently and independently of host programs.

In addition to being a stand-alone system, the Professional Computer can be upgraded to a PIC, serve as a Wang Office Information System or VS workstation, be connected via a local interconnect option, attach to Wangnet and emulate non-Wang terminals, the vendor claimed.

Once the board is installed, a Professional Computer or PIC can attach in native mode to an IBM 3270 terminal network. Modems, telephone lines or special cabling are not required. Also, both IBM's Binary Synchronous Communications and Systems Network Architecture/Synchronous Data Link Control protocols are said to be supported.

Further, a Professional Computer or PIC with the emulation board has total display-symbol compatibility with all 3278 terminals on the network. When either microcomputer is in emulation mode, the 3278 Emulation Board maintains an image of the 3278 screen. This screen image is immediately retrieved and displayed when a user returns from local programming to 3278 emulation mode, the vendor said.

The board occupies only one I/O slot on the Professional Computer's chassis and does not reduce the amount of memory available to the user. Also, the microprocessor control program for the board resides on diskette. Other features include menu access to full screen host applications, verification of line activity and condition and an independent, on-board, serial RS-232 interface, said to alleviate the need for an IBM synchronous communications adapter board and to free an I/O slot normally required for such an interface.

Available as a stand-alone product or as an attachment to the Wangnet Cmux-3270 cable multiplexer, the 3278 Emulation Board is priced at $1,095.

Wang, 1 Industrial Ave., Lowell, Mass. 01851.

Nanostar 10 supports nine users

COSTA MESA, Calif. — Star Technologies, Inc. has introduced Nanostar 10, a microcomputer that, the company claimed, can support nine users.

The base system features 128K bytes of random-access memory, which is expandable to 512K bytes; a 10M-byte hard disk; nine RS-232 ports; one parallel port; and a 16-bit Fairchild Industries, Inc. 9445 microprocesser that operates at a speed of 18 MHz, according to the vendor. Operating systems used by Nanostar include Iris from Electronics Data System Corp. and Bits from Dynamic Concepts Corp.

The microcomputer can be upgraded with 20M or 40M bytes of hard disk storage. A QIC-02 ¼-in. streamer tape, which reads data from a hard disk at a rate of 5M byte/min and provides 20M or 45M bytes of storage, can be added.

Star software reportedly can support as many as 65 users.

The base system costs $7,200, which does not include terminals.

Star Technologies, 3180 Pullman, Costa Mesa, Calif. 92626.

ORCHID

Plug-in board boosts Personal Computer XT's peformance/73

MDBS

MDBS III enhanced/78

INSIDE

- **Executive self-study course on micros/73**
- **Execuport XL portable micro announced/72**
- **Vertex announces 100M-byte Winchester disk drive/72**
- **Software protection device for Apple micros/73**
- **Graphics board for Kaypro micros/73**

Software packages seen pivotal to micro training

By Anthony J. Paoni
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Contrary to popular belief, there is no need, when conducting a training seminar on personal computers, to dive deep into hardware for the benefit of the management audience. The need to explain the attributes of read-only memory, random-access memory, erasable programmable read-only memory and so on only confuses the purpose of the seminar.

A pivotal point to be stressed in the discussion is the role of the software package. Perhaps this section deserves some special attention with regard to the overall success attributed to personal computers. There is a great deal of difference between using a personal computer and knowing how to program a personal computer in Basic.

The software discussion should touch on the cost-effectiveness of purchasing packages vs. paying for the development of custom software. At this point, there is an excellent opportunity to describe the function of the in-house support staff that management information systems (MIS) has assembled to address the needs of its personal computer users.

An overview of each of the functions that software can perform should be included in this section. By most standards, the likely candidate for heaviest use is the software that performs the function of spreadsheet analysis or electronic work sheets, generally referred to as modeling.

There are very few aspects of an organization that cannot be modeled. The decision-making process is not binary; it is iterative in nature. This fact points out the match between function and task that the personal computer brings to management's desk.

It is a simple tool for a simple but repetitive task. Managers who use modeling can demonstrate its time-saving capacity by showing examples of tasks that can be done faster and more efficiently using a personal computer with modeling software. The education process is a matter of condensing experience and relating it to the use of personal computers via description of the concept in actual practice.

With surveys showing that one out of 10 executives is afraid of computers because he thinks he will be unable to adapt to the new technology, it is obvious why management does not immediately gravitate to micros. Yet when management is properly educated, it is amazed at the potential of these typewriter-televisions.

The ability to take columnar information and turn it into meaningful business graphics may be the dark-horse winner in the management popularity contest. Obstacles to using color graphics media, namely the time and cost related to a graphics arts project, simply do not exist any more. With the simplest of instructions, complex models can be translated into easy-to-understand graphics.

A recent Wharton Business School study outlined the reasons that business graphics were used by more top executives:

- The average time for a meeting is reduced by 28%.
- The presenter is perceived as more professional.
- Complex and detailed information is understood more easily.
- The persuasion power of the presenter is increased twofold.

In reality, man is a visual animal. Approximately 87% of all information taken in is stored visually — that is, graphically.

As the management seminar begins to approach the three-quarter mark, the subject of connecting to the big computer surfaces. The obvious opportunity to save the step of keying in the information to be used in the model is to have the host computer send the information to the personal computer via a telephone connection.

For years, the management participants have approved MIS budgets

See **TRAINING** page 76

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MICROS

from page 69

with other vendors' computers. It is important, therefore, for the designers of communications software to understand the issues that go beyond accessing other micros, or information utilities such as Source Telecomputing Corp.'s Source or Compuserv, Inc.'s Infoplex. One of the most important considerations is the need for adequate file transfer capabilities. While considerable effort has been expended in developing protocols for transferring files between micros, little effort has been made in understanding the file transfer problems in large organizations.

A second area often neglected is the fact that in large organizations communications speeds are not limited to 300 or 1,200 bit/sec. In fact, it is likely that most organizations would prefer to standardize on 9,600 or even 19,200 bit/sec. In a large organization communications will probably not be constrained to dial access to mainframe systems. With newer 16-bit machines, the speed problem may have been largely solved through the use of interrupt-driven CPUs (such as the Intel, Inc. 8088s). While many commmunications programs, even for Zilog, Inc. Z80s, allow file transfer to proceed at 4,800 or 9,600 bit/sec, normal interactive communications will bog down at that rate.

Reason for speed problem

One reason for the speed problem is that many of the programs have not been optimized for the higher data rates, except for file transfers. A second reason is that while the programs flow control file transfers, normal keyboard communications is not flow controlled. Yet, there are many instances where it is not only desirable, but necessary for keyboard-to-keyboard communications to be flow controlled. Flow control is the ability to do speed matching so that data is not lost because the receiving computer is too slow. The most common approach to flow control is to buffer incoming data and then have the receiving system send an X-off character telling the sending station to stop sending momentarily.

There is a major exception to what has already been said. There are a number of programs available for a wide variety of operating systems and a wide variety of microprocessors, which emulate IBM's 3270-type terminal. The 3270 uses a synchronous rather than asynchronous protocol. The disadvantage with a 3270 emulator is that a specialized RS-232C board may be required and, more importantly, the 3270 approach is restricted to IBM-style communications. Most of the existing programs emulate a remote 3275, which requires a bisynchronous port on host, which may prove problematic under some operating environments.

An alternative method for emulating IBM 3270-type communications is to use a protocol converter, which most frequently appears to the IBM mainframe as a 3274 cluster controller and is attached through a binary synchronous or Synchronous Data Link Control port of the front-end processor. If the organization has major systems from different vendors (IBM, DEC and others) the protocol converter solution may allow a single micro to communicate with all systems over an appropriate network and use all full screen functions of all or most systems.

If the Ascii terminal emulator on the micro and the protocol converter on the IBM-compatible system is used, then care must be taken in selecting the appropriate terminal emulator.

Software designers producing communications software for microcomputers need to catch up with the marketing strategies of the major manufacturers of micros. The software houses need to take a more comprehensive view of the communications needs of large organizations. A communications program designed to meet the needs of large organizations can also be made to meet the needs of individuals, but the reverse is not necessarily true.

Madron is manager of Computer Services at North Texas State University, Denton, Texas.

Can you answer these questions on local area networks the way you would have two years ago?

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If you've got communications products our readers should know about, then you need to get your ad reservation in by February 3rd. The materials are due one week later on February 10th. To reserve ad space in the March 14th issue of *Computerworld On Communications*, call one of the sales offices listed below, or call Ed Marecki, National Sales Director at 617-879-0700.

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MICROCOMPUTERS

SYSTEMS

COMPUTER TRANSCEIVER SYSTEMS, INC.

Execuport XL; Execuport XL+

Computer Transceiver Systems, Inc. (CTS) has unveiled its first entry into the microcomputer market, the Execuport XL series of portable micros, which reportedly features dual-processor expandability.

The Execuport XL series is said to be lightweight, featuring both the 8-bit Zilog, Inc. Z80 processor and the 16-bit, Intel Corp.-designed 80186 processor. Because users can use Digital Research, Inc.'s CP/M and CP/M 86 and Microsoft, Inc.'s MS-DOS, they have access to a large base of software, the vendor said.

Two models are available: the XL and the XL+. Both models feature a 9- by 5-in. green phosphor screen that can display up to 132 col. by 24 lines and dual, double-sided, double-density, 5¼-in. floppy diskette drives with 800K bytes of formatted storage each. Other features include 22 programmable keys providing up to 44 user-defined, single-stroke functions. The units are self-contained in a leather-like case that fits under an airline seat.

The XL is based upon the Z80 processor and has 80K bytes of memory, while the XL+ adds a 16-bit coprocessor and associated 128K-byte memory to the basic machine.

In addition to CP/M and MS-DOS utilities, the following bundled software from Perfect Software, Inc. is included at no charge: Perfect Calc, Perfect Speller, Perfect Writer and Perfect Filer. The XL is priced at $2,695, and leases start at $98/mo. The XL+ lists for $3,495, and leases start at $130/mo. On-site service is included in the lease agreement.

CTS, P.O. Box 15, E. 66 Midland Ave., Paramus, N.J. 07652.

STORAGE

LOGICAL SYSTEMS, INC.

Diskdisk

Logical Systems, Inc. has introduced Diskdisk, a product that can be used to create a file that simulates a disk drive.

According to the vendor, with a double-sided, 40- or 80-track drive or a hard drive, logical drive partitions can be created as files on the physical drive.

All system functions are available as though this file were an actual physical drive, in other words, as a disk within a disk, a spokesman for the vendor said.

Diskdisk is available for Radio Shack TRS-80 Models I, II, III and Lobo Drive International's Max-80, running with Logical Systems' Ldos 5.1 operating system.

It is also available for the TRS-80 Model 4, running with Radio Shack's TRS-DOS operating system, the vendor said.

Each package costs $99, plus $3 for shipping and handling. A free catalog is available from the vendor, according to the spokesman.

Logical Systems, P.O. Box 23956, 8970 N. 55th St., Milwaukee, Wis. 53223.

VERTEX PERIPHERAL CORP.

V2100

Vertex Peripheral Corp. has added a 100M-byte unit utilizing thin-film media to its line of 5¼-in. Winchester disk drives.

Called the V2100, the drive has a 25-msec average access time and the ST412HP-standard, 10M bit/sec data transfer rate. It is intended for users with intensive microcomputing requirements, including multiuser, multitasking or image processing and net applications.

Other features include a dual-frequency, closed-loop servomechanism system, which allows continuous sampling and correction of head-to-track positioning as the disks rotate and a track density of 960 track/in. An automatic actuator lock and dedicated landing zone along with full shock mounting are said to counter potential shock and vibration damage.

The V2100 is available for a single quantity price of approximately $3,000 with OEM discounts available.

Vertex, 2140 Bering Drive, San Jose, Calif. 95131.

SPINWRITER INTR

Now you have a choice of fully compatible Spinwriters for your IBM PC and XT.

NEC MODELS OFFER SPEEDS OF 200 AND 350 WORDS PER MINUTE.

First, a few words about the original, the Spinwriter 3550.

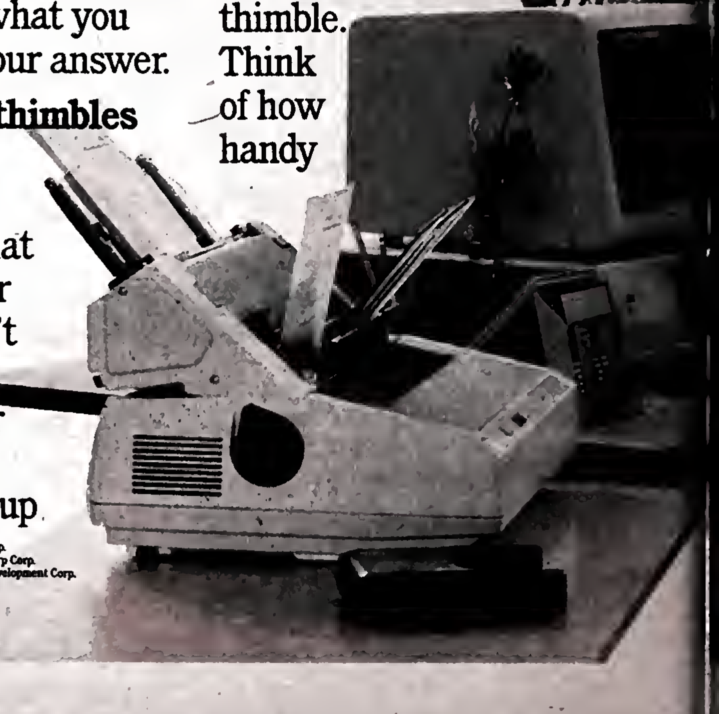
It was the first and only totally compatible letter-quality printer for the IBM PC. It plugs directly into the IBM PC and works with every piece of IBM PC software, as well as all popular third-party application packages, such as WORDSTAR,™ WORDPLUS,™ VOLKSWRITER,™ VISIWORD,™ MULTIMATE,™ BPS GRAPHICS,™ LOTUS™ 1-2-3,™ and VISICALC.™ It even looks like it was made for the IBM. Now, as good as the Spinwriter 3550 is, we recognize that a single printer can't take care of every business or professional office need. So we've added another IBM PC compatible Spinwriter: The 2050.

OUR UNIQUE "THIMBLE" PRINTER OFFERS UP TO 128 CHARACTERS AND HIGHER QUALITY PRINTING.

The new 2050 has a printing speed of 200 words per minute. And while it costs less, the print quality is still impeccable. So if low-volume letter-quality printing is what you need, the 2050 is your answer.

60 different print thimbles let your IBM PC look its best.

One of the things that gives our Spinwriter capabilities you can't even get on other printers is our unique "thimble." Each thimble holds up to 128 characters. You can even have two different type faces on one thimble or print multiple languages from a single thimble. Think of how handy



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BOARD-LEVEL DEVICES

ORCHID TECHNOLOGY, INC.

Turbo-186

Orchid Technology, Inc. recently announced a processor/memory board and software package for the IBM Personal Computer XT and compatible microcomputers that reportedly will increase the processing speed of the micro from three to 10 times.

The Turbo-186 plug-in board contains an Intel Corp. 8-MHz 80186 microprocessor, a 16-bit data/memory bus and 128K bytes of system memory. In addition, sockets are provided for on-board memory expansion to 256K bytes, according to a company spokesman. The software allows programs based on IBM's PC-DOS and Microsoft, Inc.'s MS-DOS operating systems to run transparently on the 80186 processor. In addition, programs on the 80186 can be run concurrently, handling all machine I/O, and can provide disk caching and background printer spooling and communications, the spokesman said.

The package will be available in the first quarter of this year for about $1,000.

Orchid Technology, 47790 Westinghouse Drive, Fremont, Calif. 94539.

U-MICROCOMPUTERS, INC.

U-nscrump/2

U-Microcomputers, Inc. has released a software protection device for Apple Computer, Inc. Apple II, Apple IIe and Apple III computers that plugs into any Apple expansion slot.

According to the company, U-nscrump/2, a resin plotted-circuit card, allows the end user to copy diskettes for backup in the normal way and allows transfer of software onto a hard disk or an 8-in. floppy disk or into a network.

The card includes firmware which checks out a 6-char. password and a 6-char. serial number. If the numbers don't match, the computer is halted and must be rebooted, the company said.

The price of the U-nscrump/2 protection card is $40. Quantity discounts are available.

U-Microcomputers, 300 Broad St., Stamford, Conn. 06901.

JFN INDUSTRIES

AT-1 Video Attribute Add-On Circuit Board; GR-1 Graphics Upgrade

JFN Industries has announced a graphics upgrade and an add-on circuit board designed to provide screen highlighting for Kaypro, Inc. microcomputers.

The AT-1 Video Attribute Add-On Circuit Board and the GR-1 Graphics Upgrade reportedly let Kaypro users better utilize accounting programs and programs such as the Micropro International Corp. Wordstar word processing package. Available for the Kaypro 2 and Kaypro 4, the AT-1 is said to allow reverse video, reduced intensity, blinking, reverse screen, multiple terminal emulation and screen-to-printer dump. The terminal emulation code is designed to let Kaypro 2 and Kaypro 4 computers respond to codes used by the Kaypro 10, the IBM Personal Computer and the Televideo Systems, Inc. 925 terminal.

The GR-1 Graphics Upgrade reportedly is an add-on that connects directly to the Kaypro circuit board and adds Epson America, Inc. printer-compatible graphics and screen dump character translation, the vendor said.

Now available, the AT-1 with screen dump is priced at $149.95, while the GR-1 is priced at $49.95. The units are available together for $179.95.

JFN Industries, 361 N. Fuller Ave., Los Angeles, Calif. 90036.

AUXILIARY EQUIPMENT

LANGLEY-ST. CLAIR INSTRUMENTATION SYSTEMS, INC.

Soft-View

IBM Personal Computer users can switch to amber monitors with the installation of the Soft-View amber replacement CRT tube from Langley-St. Clair Instrumen-

Continued on page 76

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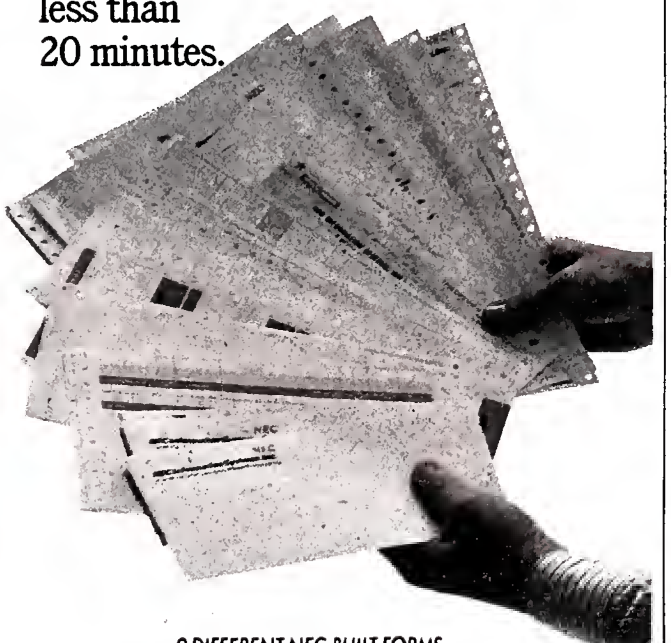

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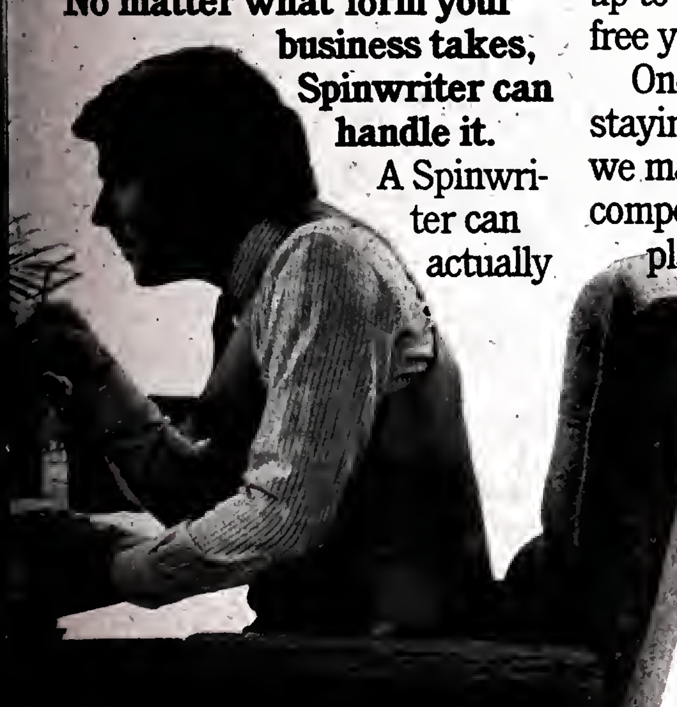

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Continued from page 73

tation Systems, Inc.

The tubes, which utilize European amber phospor, an etched antiglare faceplate and lead/strontium impregnated glass to block X rays, are said to be direct electrical and mechanical replacements for the original IBM tubes.

The Soft-View CRT tube replacement costs $99.95.

Langley-St. Clair Instrumentation Systems, 132 W. 24th St., New York, N.Y. 10011.

NETWORX
Wire Tree

Networx, a division of North American Philips Corp., has announced a four-outlet filtered power source for personal computers that reportedly protects against voltage surges, spikes and radio frequency interference.

The Wire Tree power source provides surge-limiting, solid-state circuitry in four grounded outlets, according to a Networx spokesman.

The product includes a 9-ft power cord and four peripheral power cords and is priced at $69.95.

Networx, 203 Harrison Place, Brooklyn, N.Y. 11237.

DIALOGUE SYSTEMS, INC.
Personal Computers: An Executive Self-Study Program

A self-study course designed for executives about the business applications of microcomputers has been developed by Dialogue Systems, Inc. in conjunction with Peat, Marwick, Mitchell & Co.

Called "Personal Computers: An Executive Self-Study Program," the course is divided into 12 modules, each of which requires 20 minutes of listening to audio cassettes.

In addition, an accompanying 150-page, self-study guide provides in-depth information about topics covered on the cassettes, unit summaries and a glossary of computer-related terms, according to Dialogue Systems.

The course is available for $275 from the DSI Micro Training Catalog.

Dialogue Systems, 770 Broadway, New York, N.Y. 10003.

TRAINING

from page 69

that include an ever-growing expenditure for telecommunications. Again, this is a chance to educate management on the fundamentals of communications networks.

This topic lends itself to a discussion of the company's technology plan as it relates to the use of personal computers as management tools. Under this umbrella topic, the aspect of data management can be covered to show the value in controlling a set of information that is applicable to the person or the function that is using the system.

When discussing data management, it is appropriate to set guidelines for the organization. It gives the participants a feeling for the in-bounds and out-of-bounds areas for the personal computer. Such functions as word processing fit comfortably within the capabilities of the system. However, typical uses of this capability show that draft memo writing, buck slips, sensitive communications and so on are more appropriate for management use.

Those typewriter-televisions are taking on more and more critical roles in organizations every day. The need to educate management on their potential is vital to the success of any plan for the implementation of personal computers in corporate business operations.

Soon, elementary schools in every state will have personal computers in every classroom via any one of the current bills before the U.S. Congress.

Introduction of H.R. 5573 started a national drive for education on the subject of computer literacy using personal computers.

There is no reason why intelligent, mature adults in the management community cannot also take advantage of this powerful new method of processing their organization's most valuable asset — its information.

A well-planned management education seminar on the subject of personal computers will go a long way in answering the question: "What are those typewriter-televisions anyway?"

Paoni is president of Personal Computer Management, Inc. of Wheaton, Ill., a consulting firm that provides seminars on personal computers for managers.

WHEN AMERICA'S TOP CORPORATIONS WANT TO CONTROL THEIR INFORMATION RESOURCES, THEY CALL HOLLAND.

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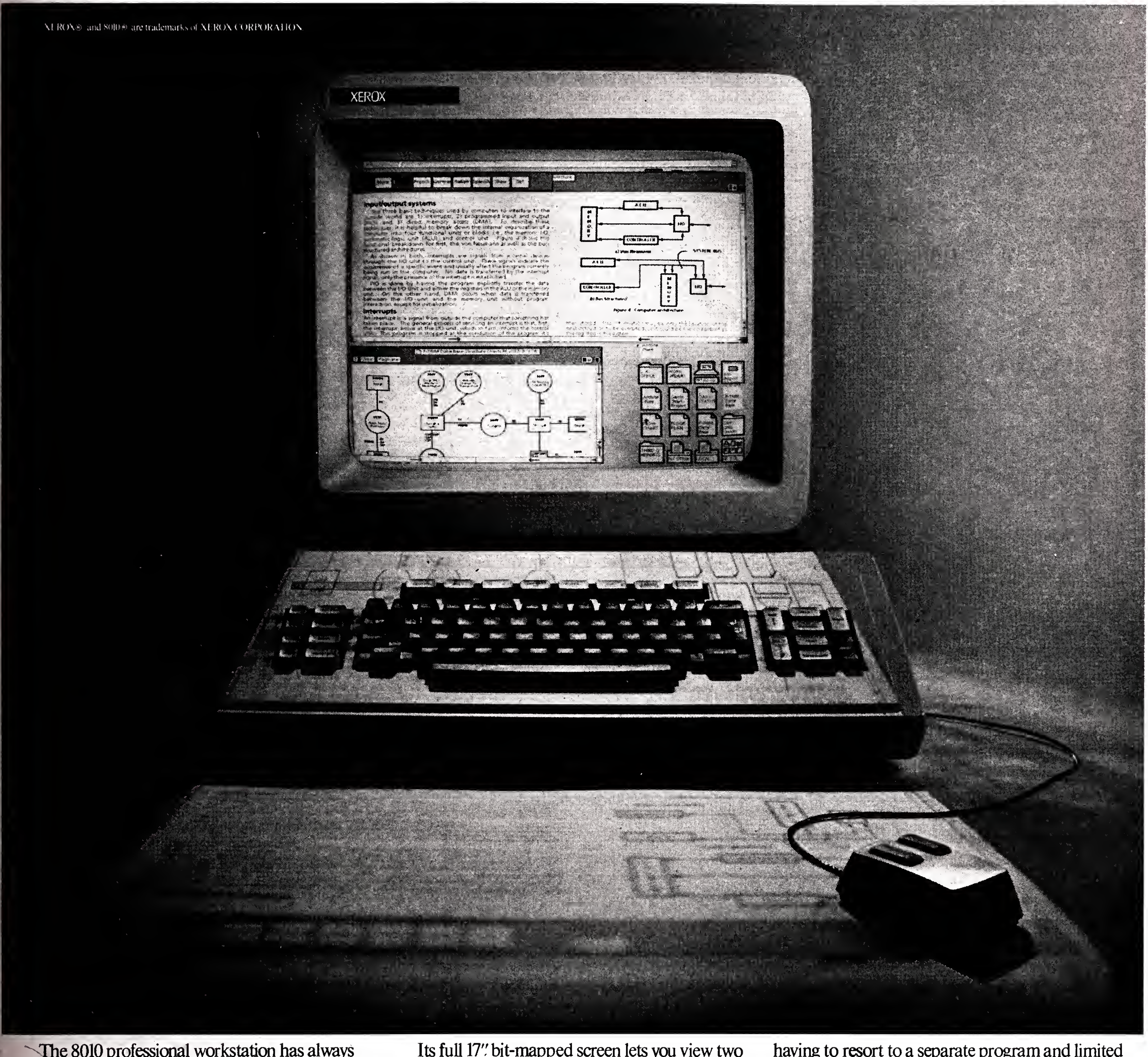

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The 8010 professional workstation has always been known as a computer of dazzling capabilities, especially in its graphics, information processing and document preparation.

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But what some people may not know is that the 8010 is also the key element in Team Xerox, a system of office machines designed to work together like a team.

When part of an Ethernet network, the 8010 can work with a wide array of word processors, mainframes, personal and business computers, printers, electronic mail and file services, facsimile terminals, communicating Memorywriters, other networks and, of course, other 8010's. It also provides 3270 and TTY emulation.

Its full 17" bit-mapped screen lets you view two full pages simultaneously and open up to six documents at a time without covering up a previous document.

It's also the only workstation that can create and print documents in more than a dozen languages, including Russian and, for the first time, Japanese (Katakana, Hiragana and Kanji).

While other workstations may use Xerox innovations like the mouse, icons, windows, property sheets and combined text and graphics, the 8010 simply does more with them.

For example, the 8010's extensive software is fully integrated, to allow you to work with text and graphics simultaneously. You can draw a flowchart right in the middle of a full page of text without having to resort to a separate program and limited buffer "scratchpad" or "clipboard."

In terms of capabilities, ease of use and overall value, the 8010 would have to be considered the stellar workstation in the industry.

For more information, call 800-527-1922 (in Texas, 800-442-0152), or send in the coupon. Or ask anyone who's ever used the 8010.

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MICROSOFTWARE

LLOYD/HARVEY CORP.
Personnel and Activity Management System

The Lloyd/Harvey Corp. recently announced a management control system to provide project and resource management capabilities to users of IBM Personal Computers, Personal Computer XTs and compatible machines as well as Fujitsu Microelectronics, Inc. machines.

The Personnel and Activity Management System (Pams) reportedly enables users to monitor projects and activities through the total development life cycle, collect historical performance and cost data at various levels, provide critical path and project variance reporting, display forecast information graphically and forecast and monitor personnel performance.

A company spokesman said the package eliminates the need for technical know-how or knowledge of computer terminology and affords the user menu-driven, command-line and soft-function key control.

The package requires two floppy disk drives, with a minimum of 320K bytes of memory each, or one 320K-byte floppy disk drive and one hard disk drive; minimum internal memory of 128K bytes; and DOS 1.1 or 2.0 from IBM or Microsoft, Inc.'s MS-DOS or Fujitsu's E-35 operating system.

A single-machine, single-site, one-time license for the package is priced at $3,500, which includes on-site installation and training.

LLoyd/Harvey, Suite 100, 18319 Delano St., Resada, Calif. 91335.

NEGOTIATION INSTITUTE
Art of Negotiation Computer Preparation Program

The Negotiation Institute has announced its software package designed to help middle- and upper-level executives and others called upon to negotiate to prepare for those talks.

The Art of Negotiation Computer Preparation Program reportedly asks users questions to clarify their knowledge and understanding of the issues and positions of all the parties involved. It is also said to help develop strategies and negotiating gambits and to allow the user to print final and interim reports.

Available now for the Apple Computer, Inc. Apple II, IIe and III, the package is scheduled to be available for the IBM Personal Computer in early 1984.

It is priced at $495, according to the vendor.

Negotiation Institute, 230 Park Ave., New York, N.Y. 10169.

MICRO DATA BASE SYSTEMS, INC.
Report Definition Language; Interactive Screen Definition Utility

Micro Data Base Systems, Inc. (MDBS) recently announced a facility for its MDBS III data base management system, reportedly allowing users to specify characteristics of a desired report and the prompting behavior of a program which generates that report.

Report Definition Language (RDL), according to a company spokesman, is a C language program containing all necessary MDBS data access logic and handles all sorting, control breaks, formatting and computation, the vendor said.

Also announced was Interactive Screen Definition Utility (ISDU) to allow users of MDBS' Screen Master, an interactive screen I/O manager to build or revise a screen dictionary interactively.

Releases of both products will be available under IBM's PC-DOS, Microsoft, Inc.'s MS-DOS and Unix on the Digital Equipment Corp. PDP-11. RDL is priced from $1,400 to $2,500, and ISDU is priced from $450 to $700. Both products are marketed by International Software Enterprises, Inc.

International Software Enterprises, Suite 400, 85 W. Algonquin Road, Arlington Heights, Ill. 60005.

POLYGON ASSOCIATES, INC.
Poly-TRM; Poly-XFR; Poly-COM

Polygon Associates, Inc. has announced upgraded versions of its emulation software, designed to allow the IBM Personal Computer to emulate the Digital Equipment Corp. VT100 series of terminals.

The company's Poly-TRM, Poly-XFR and Poly-COM had previously been available for Digital's Rainbow and Decmate II computers. Poly-TRM reportedly features emulation, while Poly-XFR features binary file transfer and Poly-COM combines the features of both. The software is said to allow the microcomputers to communicate with DEC PDP-11 and VAX-11 minicomputers.

The products are now available for $150 each, according to the vendor.

Polygon Associates, 9 American Industrial Drive, St. Louis, Mo. 63043.

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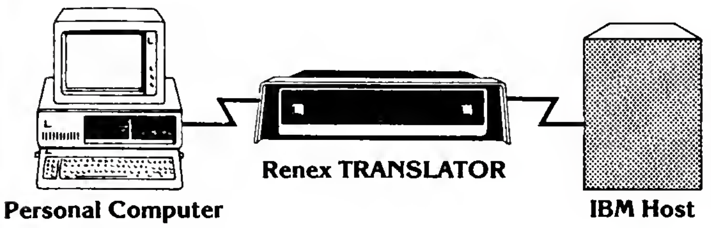

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	TV950	CRT Terminal	103.	57.	39.	
	TV970	Tilt CRT Terminal	115.	67.	43.	
NORTHERN TELECOM	NT6K00	Displayphone	124.	69.	47.	
	NT6K55	Modem 212/A	47.	26.	N/A	
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COMPUTER INDUSTRY

DEC: The revolving door

Personnel turnover significant

By Peter Bartolik
CW Staff

MAYNARD, Mass. — While Digital Equipment Corp. was going through some major financial changes during the past year, it was also experiencing significant personnel changes.

Since the beginning of 1983, DEC has officially announced the departure of six of its 28 vice-presidents, and DEC watchers claim the company has also experienced a large turnover rate at lower management tiers.

The most notable changes were the midsummer departures of C. Gordon Bell, vice-president of engineering, to join former Prime Computer, Inc. Chief Executive Officer Kenneth G. Fisher at his new venture, Encore Computer Corp. and the fall departure of Andrew C. Knowles III, vice-president of group management and considered to be the boss behind DEC's personal computer line, who left to take the presidency of Lexidata Corp. According to a DEC spokesman, Bell's duties were absorbed by Jack Smith, vice-president of manufacturing; splitting some of Knowles' duties were Joel Schwartz, vice-president and group manager of personal computers, and Edward Kramer, vice-president of corporate marketing.

Other departures from DEC included Robert Puffer, vice-president of storage systems manufacturing, who also went to Encore and whose duties were added to those already assigned F. Grant Saviers, formerly vice-president of storage systems engineering. Departing from responsibilities "unique to their own backgrounds and experiences" and not being replaced, according to the spokesman, were Richard

See **CHANGES** page 86

Commerce sees boom coming

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The U.S. computer manufacturing industry will rebound strongly from a sluggish 1983 to see a real growth rate of 18% this year, and the software and services sector will do even better, according to the U.S. Department of Commerce.

Commerce statistics, prepared for the department's upcoming 1984 U.S. outlook report, show that the computing equipment industry, measured from the office equipment sector, shipped $41 billion worth of processors and peripherals last year, a 15% hike over 1982 figures.

"Assuming continued moderate recoveries in the U.S. and European economies during 1984," Commerce said, "U.S. computer industry shipments should increase by 18%, after adjusting for inflation. Shipments would then exceed $48 billion."

Reporting on international computer trade, the department said the strong dollar, combined with weak foreign economies, held the increase in exports to a mere 5%, for a total sales volume of $10.3 billion. Imports, however, rose by nearly 40% — to $4.1 billion — with Japanese imports showing a 113% jump.

In 1984, "exports will increase by 20% to more than $12 billion," Commerce said. "Assuming continued strong growth in imports from Far East suppliers, imports should register an increase of almost 60% [to $6.5 billion], resulting in the erosion of another $500 million in the U.S. computer industry trade balance."

Taking into account U.S. production, ex-

See **COMMERCE** page 86

DEC settlement no surprise

INDUSTRY INSIGHT

BILL LABERIS

By Bill Laberis
CW Staff

The settlement reached between Digital Equipment Corp. and the U.S. government recently [CW, Jan. 9] and the accusations and counterclaims passed prior to settlement were not surprising when you consider — as DEC pointed out — that dealing with the government can be an imbroglio.

The government had accused DEC of fraudulently providing false pricing data in filling a $70 million minicomputer order in the late 1970s. But there was enough gray area in the government's claims to warrant the amicable $3.2 million settlement, instead of taking the case to court.

However, this was not the first time in recent months that DEC has had to settle with a government agency.

According to informed sources, the U.S. Customs Service launched what would become a 14-month investigation into DEC's import activities back in 1981. The investigation probed whether DEC had violated certain Customs statutes in nonpayment of import duties for goods made abroad and then shipped to DEC manufacturing facilities in the U.S. for assembly into various systems.

In particular, the government became suspect that DEC had violated provisions of Customs regulations pertaining to goods manufactured in the U.S., shipped abroad and then returned unused to the U.S. — so-called "American goods returned" statutes. Generally speaking, there is no import duty paid on such goods, as they were made in the U.S.

But what the Boston office of Customs investigated was whether DEC had la-

See **SETTLE** page 80

Cbema, Adapso study effects of information technologies/**83**

INSIDE

- Intecom, South Central Bell and Southern Bell ink $75 million pact/**80**
- Suit targets high-tech's exemption from wage law/**81**
- Group fosters information exchange among top execs/**84**
- McAuto acquires CSS/**81**

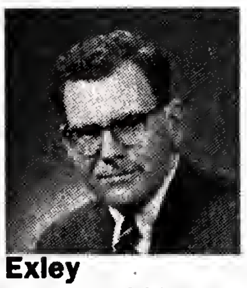
Sperry, NCR, Honeywell eye plumper bottom lines

By Bill Laberis
CW Staff

With hopes buoyed by a generally bullish view of the economy in 1984, three of the top five non-IBM-compatible mainframers have predicted fatter bottom lines in both sales and profit over the next 12 months.

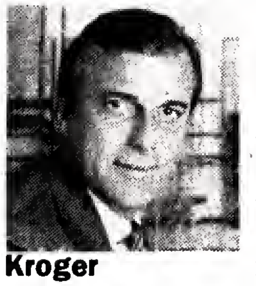
The companies — Sperry Corp., NCR Corp. and Honeywell, Inc. — predicted further that increased levels of research and development spending would sustain real market growth throughout the year, provided that the domestic economic boom continues and the international economy shows at least marginal improvement over the past three bleak years.

Of the three, Honeywell remained the most reserved in its look ahead. Edson Spencer, Honeywell's chairman, complained that business worldwide "remains concerned over an uncontrolled U.S. budget deficit that threatens a return of higher interest rates." Honeywell, too, has the least market success in 1983 of the noncompatible mainframers, which include itself, Sperry, NCR, Burroughs Corp. and Control Data Corp. — the so-called "Bunch."



Exley

While Honeywell managed to get back on a growth track in terms of sales and profit, most of the growth came from its noncomputer operations, such as manufacturing process control and instrumentation. The company's information systems wing contributes 30% of the total revenues, but only 20% of the profit. In its most recent reporting quarter, Honeywell's profits climbed 35% on a modest 5% revenue gain to $1.4 billion.



Kroger

Remarking on Honeywell's computer operations, Spencer said the company hopes to cash in on cost-cutting measures instituted in the past 18 months, including two major layoffs. Honeywell also expects to begin volume shipments of its DPS 88, its largest mainframe, sometime this year. Banking on market acceptance of a string of new products introduced last year and on its thrusts into new markets, NCR said it is looking to duplicate the strong performance it registered — both in the market and on Wall Street — in 1983.

NCR's stock price climbed nearly 90% in the last 13 months, during which time the company took steps to shatter its transaction processing mold, announcing first-time products in the microcomputer, word processing and communications network areas.

"At present, we are at the midpoint in the introduction of our [very large-scale integration] generation products with a number of new offerings scheduled for release during 1984," Charles E. Exley Jr., NCR president and chief executive officer, said. "It is our goal . . . to make our 32-bit chip set one of the standard 32-bit microprocessors used by other system builders in the industry."

Spencer

Sperry parlayed stepped-up cost cutting with sizable government contracts to get its Computer Systems Division back on track in 1983. However, as with other Bunch companies such as Honeywell and Burroughs that rely heavily on their installed mainframe base to market new products, Sperry's future performance remains a question.

Most analysts, however, concede that 1984 will be a kind year to most

See **SPERRY** page 80

DG users group calls for papers

WESTBORO, Mass. — The North American Data General Users Group has issued a call for papers from users, independent software vendors and OEMs.

The papers will be considered for presentation at the Data General Corp. group's 1984 conference, which is slated for Aug. 27-30 in San Diego.

According to a spokesman for the group, topics for papers can include new discoveries, unique concepts or special knowledge in the areas of computer technology, management or marketing.

Presentations will be based on an abstract of the paper.

Abstracts are due before Feb. 27, the spokesman said.

Data General, 4400 Computer Drive, Westboro, Mass. 01580.

Southern Bells tie Intecom knot

ALLEN, Texas — Intecom, Inc. has inked a $75 million manufacturing and distribution agreement with South Central Bell and Southern Bell, allowing the communications companies to market Intecom's family of private branch exchanges (PBX) to their business customers in nine states.

Under the terms of the manufacturing and distribution agreement, Intecom will manufacture its PBX product line at its facility here, with the system then marketed by the Advanced Systems Division of Bell South, which is a holding company for Southern and South Central Bell.

Intecom will support initial installations of the PBX for Advanced Systems Division customers, while providing training and documentation for the operating divisions.

SETTLE from page 79

beled as American goods returned a number of components that were actually manufactured abroad and, therefore, required payment of import duties. The government found DEC had done this.

The next question was: Did the firm do so with willful and fraudulent intent?

The Boston office reported its findings of "numerous unit violations" to a district office of the U.S. Department of the Treasury, of which Customs is a part. The government declined to prosecute, apparently again finding enough gray area in the implementation of its own requirements.

The government is likely to be more aggressive in addressing the alleged conduct of the 10 semiconductor companies it has been investigating for the past two years. Included on the list of companies investigated are National Semiconductor Corp. and Fairchild Semiconductor Corp.

The government believes the firms falsified documents stating that chips sold to government agencies, the U.S. Department of Defense in particular, had passed required tests, when, in fact, they had not.

Bill Laberis is senior editor/industry at Computerworld.

SPERRY from page 79

major computer companies.

Growth anticipated

"We anticipate the continued strengthening of the general economy which, in turn, will trigger increases in capital expansion budgets and enhance computer demand through industry and government," according to Joseph J. Kroger, Sperry's Computer Systems Division president.

"As a result, we are projecting computer systems revenue to double over the next five years with an annual profit growth of 30% or more," according to Kroger.

Sperry's Computer Systems Division revenues for fiscal 1984, ending March 31, will be about $2.9 billion, according to a spokesman for the firm.

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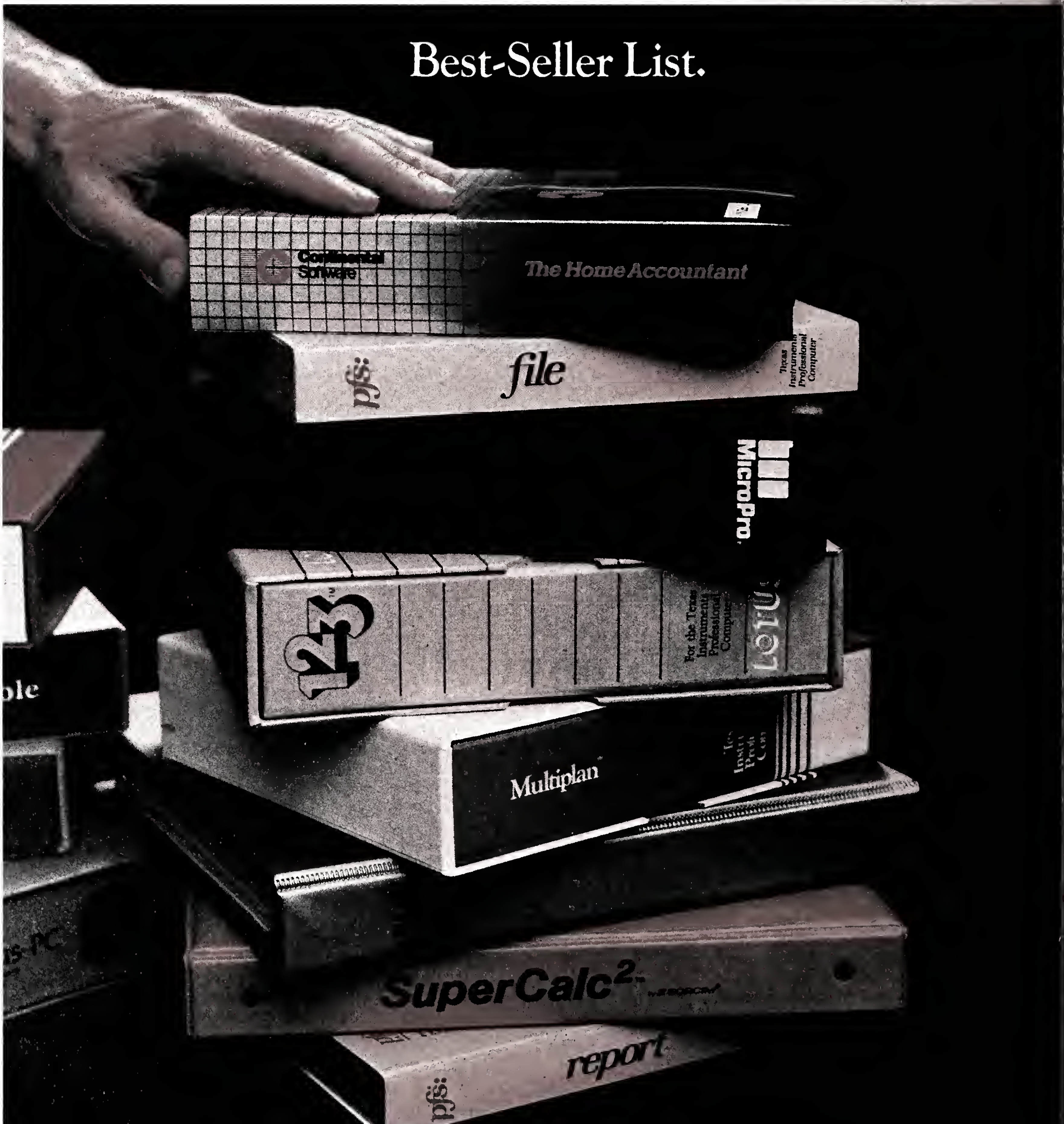

These best-sellers are among the most popular business software programs for microcomputers as reported in *Inc.* magazine, September, 1983.

McDonnell Douglas acquires time-sharing firm

Gets Computer Sharing Services in $70 million deal

ST. LOUIS — Less than a month after its attempt to acquire Tymshare, Inc. fell through, McDonnell Douglas Corp. announced the recent acquisition of another computer time-sharing firm, Computer Sharing Services, Inc. (CSS).

The nearly $70 million deal, far smaller than the $370 package that cash-rich McDonnell Douglas tried to assemble for Tymshare, will result in CSS being incorporated as a subsidiary of McAuto, the firm's computer services division.

Robert A. Fischer, McAuto president, said that Jerrol Alkema will continue as CSS president.

Fischer said that 130 technical workers from McAuto's communications industry business unit and 35 marketing representatives will be assigned to CSS.

CSS, which had revenues in fiscal 1983 of $27 million, provides computer and data processing services to telephone companies as well as other commercial or business customers.

The company employs 275 people and operates a Honeywell, Inc.-based mainframe shop at its Denver headquarters.

Unions sue on wage law

WASHINGTON, D.C. — The computer industry's long-running battle against a federal law setting wages for government services contracts moved into federal court recently when labor unions sued to stop the Labor Department from granting high-technology firms an exemption from the wage law.

Earlier, the department had exempted from the provisions of the 1965 Service Contract Act agreements between private firms and government agencies for maintenance and repair of DP equipment, office systems and high-technology scientific and medical equipment [CW, Nov. 14, 1983].

Companies in those industries and their representatives here argued that the law, designed to prevent "wage busting" by firms seeking government contracts, should not apply to them because their service workers are highly paid and perform the same work at the same wages for government as they do for private organizations.

Labor agrees

Labor decided that applying the law to this type of work was unjustified.

Labor agreed with Congress' General Accounting Office, which said the exemption was warranted and that without it agencies might have difficulty obtaining services because providers would refuse government work rather than accept the regulated wage scheme.

Immediately after the exemption was finalized, the AFL/CIO and affiliated unions asked the District Court here to overturn the decision.

Unions upset

The unions called the Labor Department decision "arbitrary, capricious [and] an abuse of discretion."

The department is being supported in the suit by groups in favor of the exemption.

Those groups include the Computer and Business Equipment Manufacturers Association and the Computer and Communications Industry Association, which have filed amicus briefs backing the exemption.

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It's no wonder critics have called it "the optimum personal computer."
Popular Computing
October, 1983

The TI Professional Computer's outstanding monitor resolution and 8-color graphics make best-selling programs like Lotus 1-2-3™ sharper, easier to work with. And the fact that you can put three times the graphic information on your screen — in both color and monochrome — means you'll be able to take even greater advantage of the best graphics programs. For best-selling word processing packages like WordStar,™ TI's comfortable, typewriter-style keyboard is a natural. Anyone

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familiar with a standard typewriter keyboard can start to work immediately, without re-learning key positions.

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TI's revolutionary development of speech recognition is another way TI helps you get the most from your software.

Leading third-party software suppliers are developing new programs to take advantage of TI's speech technology. In early 1984, with Speech Command,™ you'll be able to say things like, "Inventory analysis, please," and have a spreadsheet displayed instantly on your monitor. Voice-operation will make the TI Professional Computer easier to use than ever before.

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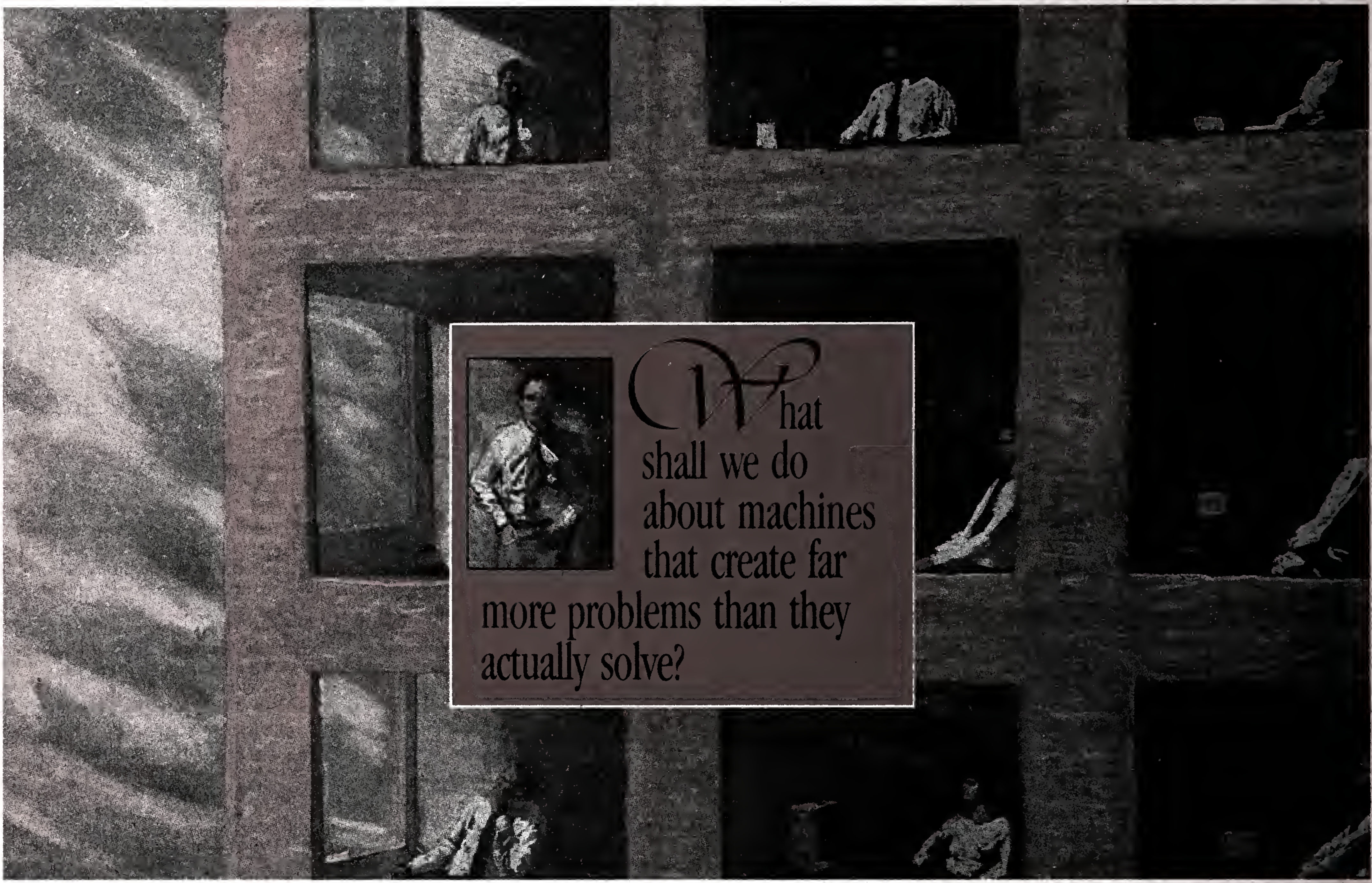
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More troubling: there has been no way to control the information flow. No way to make these machines communicate with one another, or with the company's mainframe. No way to customize software to meet specific company needs.

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Visi On is a completely new generation of business software that harnesses the power of the personal computer; a microcomputer applications manager designed to work in tandem with the operating system of the pc, and integrate any number of application programs.

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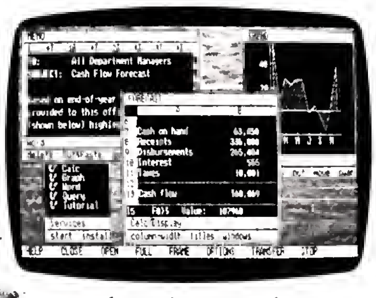

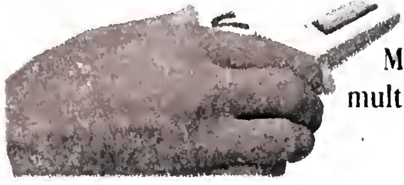

Even more impressive, their strength is actually boosted when these applications are *combined.*

Making maximum use of multiple electronic windows and a mouse, Visi On instantly transfers data between applications, demonstrating depth of integration to an unprecedented degree. Instead of doing just one job at a time, the user may move from project to project, backed up always by the full power of the machine.

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There. Already it's getting quieter in your department...

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Indeed, for MIS managers as well as for users, Visi On is a virtually instantaneous remedy for the problems experienced with personal computers.

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Cbema, Adapso groups to study technology's effects

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Two computer industry trade groups headquartered here are completing plans for separate but similar organizations to study the societal effects of information technologies.

The Information Age Institute, a privately organized and supported entity representing manufacturers, users, professional societies and academia, will be announced soon by the Computer Business and Equipment Manufacturers Association (Cbema). And the Association of Data Processing Service Organizations, Inc. (Adapso) is completing work with members of Congress on legislation setting up a government commission on high-technology issues.

The Information Age Institute will provide information and education on issues such as public acceptance of new technologies in the work place and associated political issues and human resource problems, Cbema said.

While the institute's agenda will be determined by its participants, topics such as video display terminal safety and worker displacement and retraining were cited as examples of issues of interest to the new organization.

'Very good response'

Cbema spokeswoman Charlotte LeGates said the plan has been "presented to a large number of associations and other interested organizations, and we have gotten very good response."

Because commitments to the institute are incomplete, Cbema has not released the names of organizations interested in joining. But members could come from the computer and telecommunications industries, organizations representing attorneys and engineers and the banking, insurance and air travel industries, she said.

LeGates said the institute, to be based here, will be formally announced sometime during the first quarter of this year. The size and makeup of the institute's board of directors and staff will depend on how many join the effort, she said. She indicated the organization eventually may become affiliated with a university.

According to LeGates, the institute is necessary because "the ignorance of facts surrounding the introduction of technology . . . produces fantasies and fears that discourage people from using technology with the potential to help them."

Cbema hopes an independent, widely representative organization can provide credible information on this topic. "We can't wait around for the government to have 20,000 committees and think about it," she added.

Adapso, also concerned that these subjects are not being properly addressed in a public forum, is, however, taking a different approach. The association hopes to have a bill introduced in Congress soon to set up a blue-ribbon panel representing industry, government and academia.

Its purpose, according to Adapso spokesman David Sturtevant, will be "to look at all the issues relating to technology and its impact on society at large."

Congressional supporters of the idea have persuaded the association that the commission should be financed by the government and not the private sector in order to ensure it is nonpartisan, Sturtevant pointed out.

Although plans for the commission are not complete, he suggested it could last three or four years and cost about $2 million a year. According to present thinking, the panel would direct a small staff in collecting information and sponsoring studies on various high-technology issues, Sturtevant said.

Having established "a body of knowledge" on these issues, the commission would most likely issue a report indicating problems and concerns requiring government attention, he said.

Saying "everybody is talking about these problems in very general terms," Sturtevant said the association is "frustrated" it has not been able to get the commission legislation introduced earlier. Nevertheless, he said, Adapso is confident the bill will appear within the next few months.

Houston to host Adapso meeting

ARLINGTON, Va. — The Association of Data Processing Service Organizations, Inc. (Adapso) will host its 60th Management Conference in Dallas March 19-21 at the Fairmont Hotel.

The conference will feature more than 40 workshops, seminars and programs covering management issues facing the membership..

Both members and nonmembers of Adapso are invited to attend, according to a spokesman for the association.

Adapso, Suite 300, 1300 N. 17th St., Arlington, Va. 22209.

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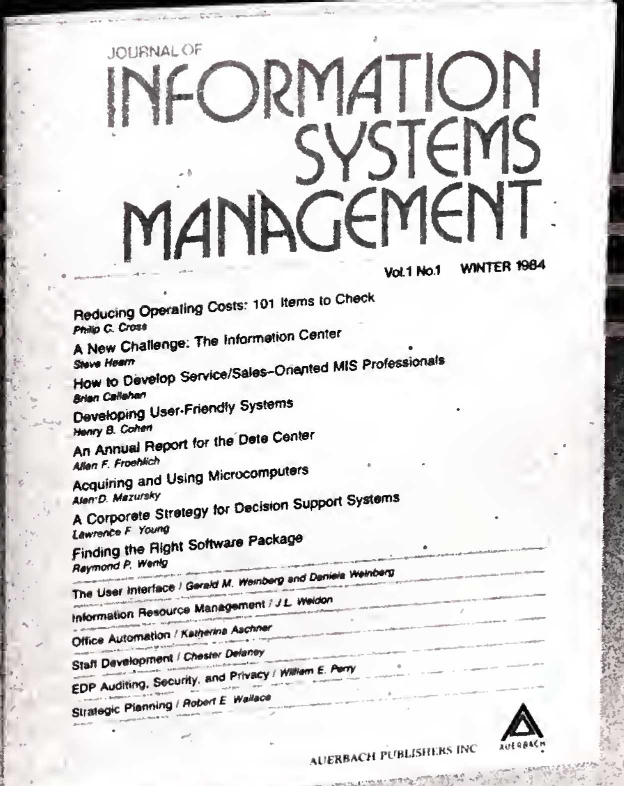

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Net facilitates data exchange among execs

Founded to improve caliber of Southern California CEOs

By Robert Batt
CW West Coast Bureau

> *Our research confirmed that the key to an organization's success is the CEO's performance in charting the company's strategic course, developing the management team and securing needed resources.*
> — Steve Panzer, Panzer, Swarts, Weiss & Co.

LOS ANGELES — In an age when access to relevant information can make the difference between success and failure for a high-technology company, a group of senior Southern California industry figures are trying to facilitate cooperation and exchange of information among key decision makers.

Focusing solely on the information needs of chief executives, the Southern California Technology Executives Network (Socalten) was founded last year on the principle that greater cooperation and exchange among chief executives will enable both the Socalten members and the high-tech community at large to gain greater competitive advantage.

"Our objective is to improve the caliber of chief executive officers [CEO] by increasing their overall management capabilities and practices. As a secondary consideration, we also want to gain some more recognition for Southern California as a region of high technology," explained Walter Bauer, president of mainframe software maker Informatics, Inc. and chairman of Socalten.

Since its incorporation, the network has signed on 73 chief executives, each paying a $1,000 annual fee. Other chief executives involved in Socalten include Thomas Ringer of Fujitsu Systems of America, Inc.; Gary Liebl of Microdata Corp.; and Richard Cortese of Alpha Microsystems, Inc.

According to Bauer, about 80% of the companies that have joined the network to date are computer companies, with about three-quarters of these being software companies.

Critical success factors

Socalten is the brainchild of Steve Panzer and Jeff Weiss, partners in the Los Angeles-based management consulting firm of Panzer, Swarts, Weiss & Co. The idea, Panzer explained, arose from a study the firm conducted of critical success factors in 25 Calif.-based emerging high-tech companies, including Ashton-Tate, Corona Data Systems, Inc. and Ryan-McFarland, Inc.

"Our research confirmed that the key to an organization's success is the CEO's performance in charting the company's strategic course, developing the management team and securing needed resources," Panzer asserted. "However, when we began speaking with these executives, we sensed that most of them in Southern California experienced terrific isolation. They didn't feel they had the same network of support of their counterparts in the Silicon Valley or the Boston area," Panzer added.

In an attempt to fill this need, Socalten focuses on four key activities as a way of providing core information to its members:

- CEO round tables, comprising groups of 12 to 14 CEOs who meet once a month for intensive half-day sessions focusing on topics such as marketing, strategic planning, management development and finance.
- "The Executive Report," a monthly publication intended to provide a concise overview of relevant information from several key management, technical and market sources.
- Network conferences and seminars, in which industry leaders and experts participate. For example, the next full-day conference, titled "In Search of Excellence in the Management of High Technology," will concentrate on major industry trends, including the role of IBM.
- Membership Resource Directory, providing a description of each CEO member and his company.

MERGERS AND ACQUISITIONS

Perceptronics, Inc., Woodland Hills, Calif., has reached an agreement in principle to acquire **First Ann Arbor Corp.** of Ann Arbor, Mich., a research and development organization.

■

Wyly Corp. of Dallas has signed a letter of intent to acquire **Financial Systems of America, Inc.** of Winter Park, Fla.

■

Micom Systems, Inc. has completed its acquisition of **Industrial Computer Controls, Inc.**, Cambridge, Mass., a manufacturer of IBM-compatible protocol converters.

■

Eastman Kodak Co. has acquired the assets of **Mead Digital Systems**, a division of Mead Corp. Renamed **Diconix**, the organization will continue operations in Dayton, Ohio.

■

Cognitronics Corp. has agreed in principle to acquire two San Diego-based companies, **American Computer Corp.** and **Administrative Systems, Inc.** (ASI), for an initial purchase price of $1.2 million, payable in a combination of cash and stock.

Future payments in cash and stock up to a maximum of $8.7 million are dependent on growth in revenues and earnings over the next 2½ years.

American, a hardware firm, and ASI, a software development company, have combined their products into turnkey systems for the health care industry.

■

Continental Telecom, Inc. (Contel) will acquire **Codata Systems Corp.** through the issuance of shares of Contel common stock in exchange for Codata's outstanding capital stock. Codata will be operated as a separate business entity by Cado Systems Corp., a member of Contel's Business Systems Group.

■

Crowntek, Inc. has bought a 35% interest in **Waterloo Microsystems, Inc.** and is launching an integrated office automation system utilizing IBM Personal Computers and the Waterloo Port software.

■

Emulex Corp. has announced an agreement in principle to acquire **Personal Systems Technology, Inc.** (Persyst), a maker of memory, graphics and communications hardware and software products for IBM and IBM-compatible personal computers. Basic terms of the acquisition call for Emulex to purchase 100% of Persyst's outstanding stock for 480,000 shares of Emulex.

■

Compucorp has entered into a definitive agreement with **Litton Industries, Inc.** to acquire an 80% interest in **Monroe Systems for Business, Inc.**, a Litton division.

■

United Telecommunications, Inc. has acquired **GTE Companion Service** from GTE Corp. for an undisclosed amount of cash.

■

Computer Horizons Corp. has acquired certain assets of **Cincinnati Applied Software, Inc.** of Florence, Ky., for an undisclosed cash amount.

■

Valid Logic Systems, Inc. has signed an agreement in principle to acquire **HHB-Softron** of New Jersey in exchange for stock valued at $5.5 million.

■

Recognition Equipment, Inc. (REI) has completed the purchase of all outstanding shares of stock of **Consolidated Computer International, Inc.** (CCI) for $2.7 million. In connection with the transaction, REI has entered into an agreement to manage the U.S. installed lease base of **Finecomp, Inc.** for a share of the lease revenue. CCI and Finecomp are U.S. subsidiaries of Nabu Manufacturing Corp. of Ottawa.

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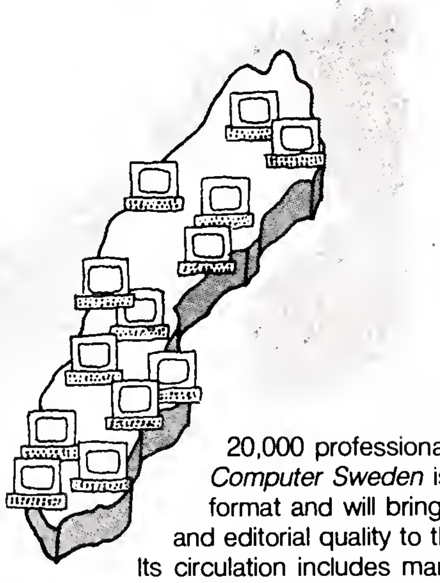

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CHANGES from page 79

J. Clayton, vice-president of manufacturing technology, now vice-president at Thinking Machines, Inc.; Lawrence J. Portner, vice-president of corporate planning, who joined Apollo Computer, Inc.; and Roger Cady, vice-president of manufacturing distribution control product group, who did not announce his plans.

DEC has promoted two group managers to positions of vice-president and group manager: Samuel H. Fuller, who formerly headed corporate research and architecture and who now heads research and architecture, and Jeffrey C. Kalb, who headed the large-scale integration semiconductor group and is now vice-president over that group. Additionally, in January, DEC announced the appointment of Robert W. Taylor to head a new systems research center in Palo Alto, Calif.; Taylor formerly spent 13 years with Xerox Corp. in Palo Alto and previously managed the research programs at the U.S. Defense Advanced Research Projects Agency, which developed the Arpanet network.

Provides opportunity

In a recent interview, DEC President Kenneth H. Olsen said the vice-presidents left as friends, and the turnover "gives the opportunity for the bright, young grade of people to move in and take these jobs."

One DEC watcher, and sometimes critic, who agrees the changes are positive is Sonny Monosson, publisher of the newsletter "Monosson on DEC." "Any company that has grown as fast as [DEC] has probably stretched their people to the limit," he said in a recent interview with *Computerworld*. Monosson said he believes change is good for any firm and that the turnover gives DEC an opportunity to bring in new people.

Peter Lowber, who follows the company for The Yankee Group, Inc., disagreed: "I don't see how it could be good," he said. "They need the same engineering expertise they have lost."

Similar problems

Lowber believes all the established minicomputer companies are experiencing similar problems. "They're all running off to start-ups." Lowber said he thinks DEC does need new blood in the area of marketing, however.

Aaron Goldberg, DEC watcher with International Data Corp., said he was concerned with the "exodus" of people heading various "projects" for the company. Both Lowber and Monosson agreed. "They have left, too; [turnover] is just the same at the lower level," Monosson said.

None of the DEC watchers believed DEC is in any imminent danger as a result of the financial and personnel changes suffered in the past year. "There will be a DEC in 1990," Monosson's newsletter declared recently, "but a DEC confined to the technology it can command."

Lowber added, "I think DEC will hang in there; they will try to turn it around in 1984. I think they will be able to turn it around, but in a longer time frame than that."

COMMERCE from page 79

ports and imports, Commerce estimated the U.S. market for computer equipment will total about $40 billion in 1984, almost 23% more than in 1983. Imports will rise to 16% of that market, with the Japanese accounting for 10% of the market.

The government also reported employment in this sector increased 8.3% last year, from 336,000 to 348,000, and should climb another 4% this year, to 362,000.

Long-term prospects

Looking at the long-term prospects for this industrial sector, the department said: "The U.S. computer industry grew at an inflation-adjusted compound annual rate of about 19% from 1972 to 1981, when the recession lowered this average slightly. Several influences will act to depress the annual average to 17% a year through 1988, while imports could increase an average of 35% a year."

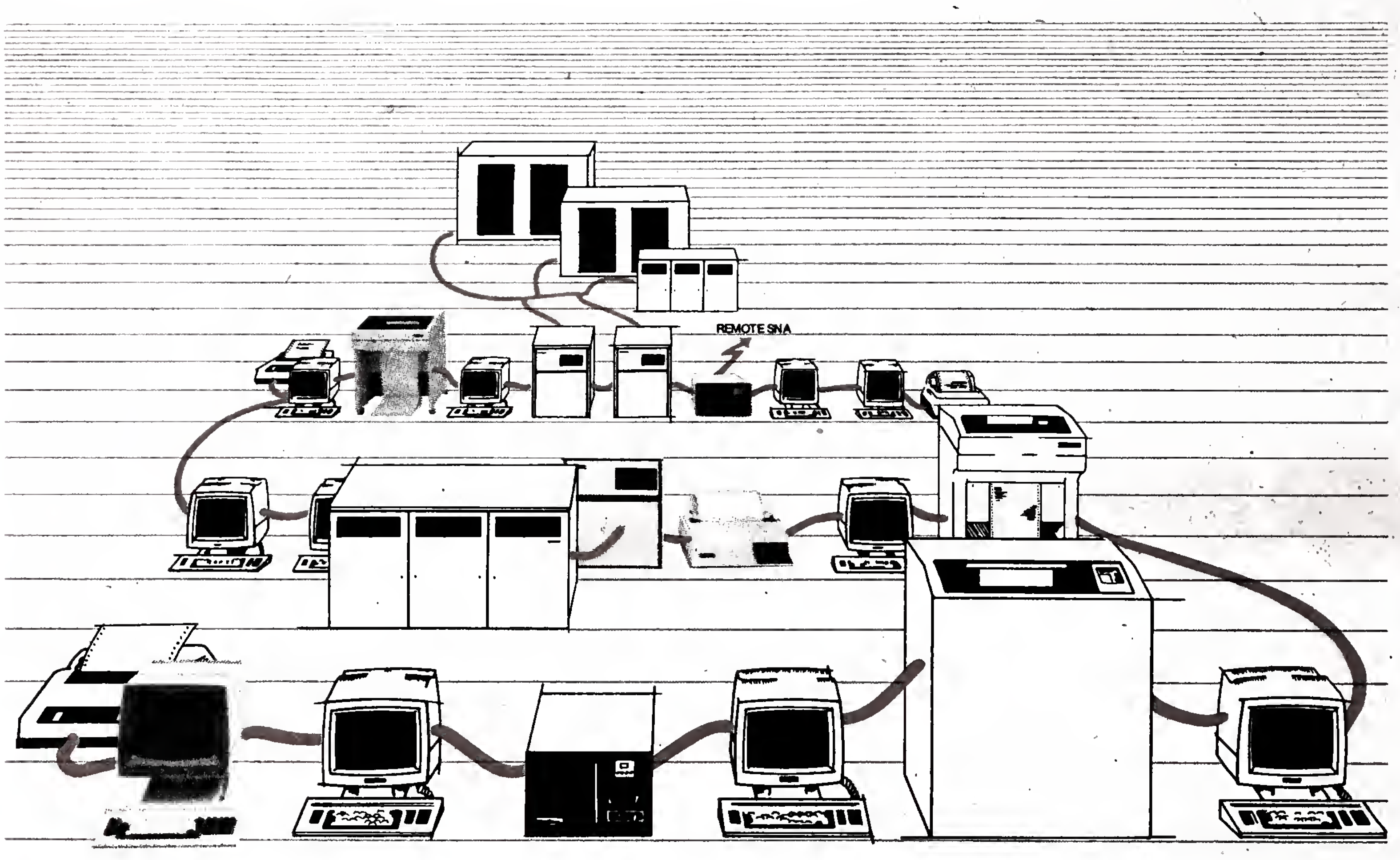
One of the negative factors, the department said, is the continued movement of production from the U.S. to foreign sites. This will be partly counterbalanced by increased use of automated production in the U.S., the continued introduction of high-value products, particularly those stemming from relationships with the semiconductor and telecommunications industries, and the rate at which foreign firms set up production facilities in the U.S.

"Foreign competition could act to restrain U.S. exports, keeping average increases at the 15% to 20% level rather than the 30-plus percent rates of previous years," according to Commerce.

Turning to the computer software and services industry, Commerce estimated that 1983 domestic revenues increased 20% to $31.6 billion. This was a slight improvement over the 18.5% increase the year before.

Commerce quoted U.S. Bureau of Labor Statistics' figures that suggested hiring in this industry expanded slowly during 1983 following a year in which declining demand in the U.S. and other countries held employment growth well below the 12% annual average from 1974 to 1981.

In 1984, assuming continued moderate economic recovery in the U.S., the domestic revenues of this industry should grow at a rate slightly below the historic average of 25%, and foreign revenues might improve only gradually because of the slow pace of recovery in major markets, the department said.



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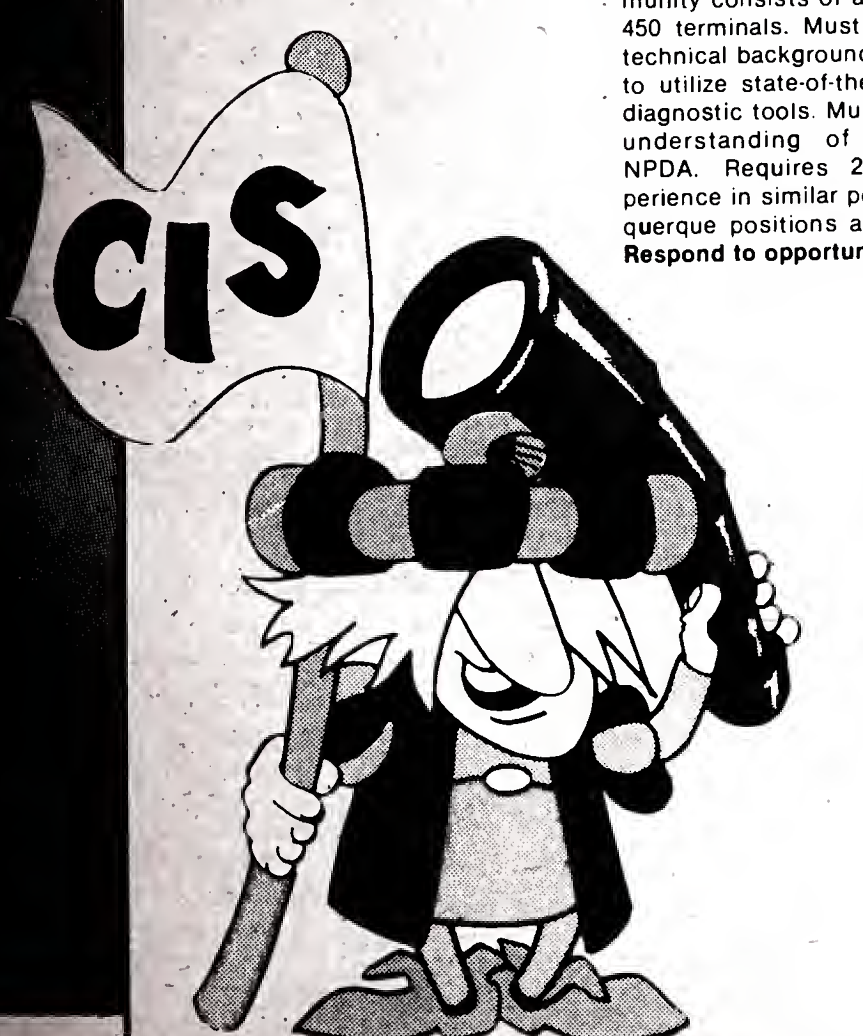
BA or BS in Computer Science or Business. Should have played a major role in systems development. Strong written and verbal communication skills are desired. Familiarity with structured methodology (such as SDM/70) is a plus. Successful candidate will implement financial, manufacturing or marketing systems and interface with other user groups. **Respond to opportunity #009.**

Data Base Analyst

You should have 5 years' experience in Data Processing, with 3 years in data base applications. Design and implementation of commerical applications also required. Data administration stewardship is a must. **Respond to opportunity #010.**

Network Control Operator

Monitor large IMS/VM Network utilizing SNA/SDLC. User community consists of approximately 450 terminals. Must have strong technical background and be able to utilize state-of-the-art network diagnostic tools. Must have basic understanding of NCCF and NPDA. Requires 2 years' experience in similar position. Albuquerque positions also available. **Respond to opportunity #011.**



Albuquerque

New Mexico Opportunities

We are moving our Corporate Computer Services to Albuquerque, New Mexico and are interviewing for positions which will play a key role in this move. All Albuquerque positions will start in California and then transfer to New Mexico with relocation assistance. This data center will consist of twin 308X processors supporting VM/CMS and MVS/JES2 users.

Computer Operations Shift Supervisor

Three-five years' operating experience (including 1 year in a supervisory role) in a large-scale IBM environment utilizing VM, IMS, MVS/JES2 software. Will manage operators, analysts and distribution clerks; coordinate user-programmer and upper management interface and monitor processing in a variety of support areas. **Respond to opportunity #012.**

Operations Analyst

Two+ years' experience in ABEND resolution and working knowledge of MVS JCL is required. Experience working with production cycles in a large IBM environment is necessary. **Respond to opportunity #013.**

Data Communications Analyst

Two+ years of hands-on experience in a large network control center. Will be responsible for problem diagnostics and terminal availability. California positions also available. **Respond to opportunity #014.**

Sr. Computer Operator

Two-five years of operator experience in a large-scale IBM environment utilizing MVS/JES2 and VM software. IMS and TSO experience a plus. Several shifts available. **Respond to opportunity #015.**

DEC Systems Programmer

BS or equivalent and 5+ years' experience required. Responsibilities include installation, maintenance and support of DEC Hardware/Software. Must have knowledge of VAX, PDP-11, VMS, and RSX 11M. Telecommunications and CAD/CAT/CAM knowledge desirable. **Respond to opportunity #016.**

Hardware Manager

BSCS and 4+ years' experience required. Will be responsible for management of computer hardware, including configuration layout and equipment installation, as well as vendor maintenance and problem resolution. Should have knowledge of environmental controls and performance characteristics of IBM equipment. **Respond to opportunity #017.**

Sr. Systems Software Programmers

Five+ years' experience. Will be responsible for performance and future requirements planning of MVS/JES2 system supporting IMS/DC and TSO on an SNA network. **Respond to opportunity #018.**

We will be interviewing soon in the Chicago, IL; Dallas/Houston, TX; and Washington, D.C. areas. For more information, please call **Kathy Connell, collect at (408) 746-2213** or forward a letter and/or resume indicating opportunity number to: **Signetics Corporation, Professional Staffing, Attn: Kathy Connell, 811 East Arques Avenue, Mail Stop 2507, P.O. Box 3409, Sunnyvale, CA 94088-3409.** We are an equal opportunity employer.

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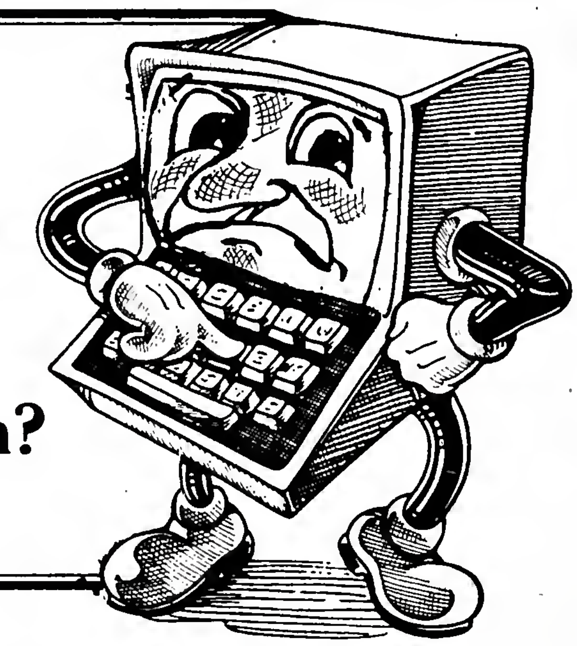

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Manager of New Services

Share supervision of the technical staff of the Computer Center and manage the development of all NEW services to be delivered by the Center. Primary responsibilities include technical planning for hardware and systems software, managing the development of new hardware and software facilities, and the integration of new facilities into existing support services.

Applicants should have 1-3 years' experience managing a technical development group, a broad background in the current uses of computing, and experience integrating operating systems and applications software into cohesive facilities. Excellent interpersonal and communications skills and familiarity with the facilities and limitations of VM/CMS are also required. Experience connecting ASCII terminals and workstations to mainframes is highly desirable.

Systems Programmer

Will participate in system maintenance and the design and development of changes to the VM/CMS operating system and various systems software, install applications packages, and assist in the efforts to improve the interconnections between the 3081, the LAN, and workstations.

Applicants should have 3 years' experience maintaining and modifying the CP portion of VM/CMS, experience with non-SNA communications protocols in a heterogeneous environment and strong interpersonal and communications skills.

Interested persons should send their resume to Michael Brennan, Brown University, P.O. Box 1879, Providence, RI 02912.

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For consideration of any of these openings please send your resume, in confidence, to: Kollsman Instrument Company, Division of Sun Chemical Corporation, Att: Dave Osgood, Technical Recruiter, Box CW116, 220 D.W. Highway South, Merrimack, NH 03054.

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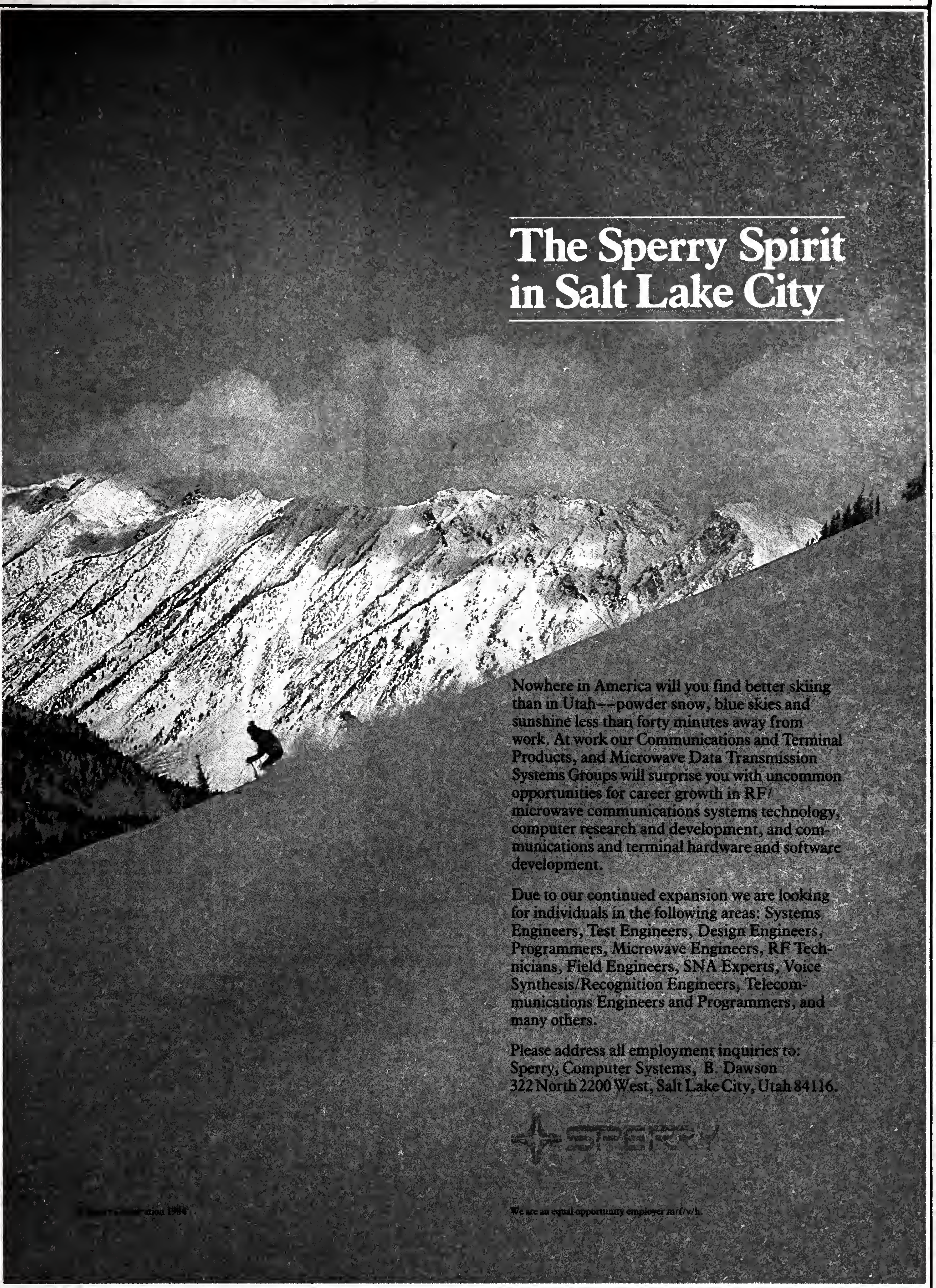
Interested applicants should send resumes to **Doris Kindell, ASES, P.O. Box 2236, Opelika, Alabama 36803-2236** or apply in person at any Alabama State Employment Service. Job Order No. 0027748, E.E.O.



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Bank Sys Anal (3 yrs IMS, CICS or HOGAN)	28-36K
Insurance Prog/Anal (2 yrs MVS, CICS)	21-28K
Prog/Anal (2 yrs UNI 1100, DMS 1100)	23-32K
Prog/Anal (2 yrs IMS, CICS or IDMS)	25-35K
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Sys Prog (2 yrs IMS, CICS or IDMS)	27-40K
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DEC Sys Prog (2 yrs PDP II or VAX)	25-40K
DEC Software Engr (2 yrs PDP II or VAX)	25-35K
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A second copy of the above mentioned information should also be mailed to

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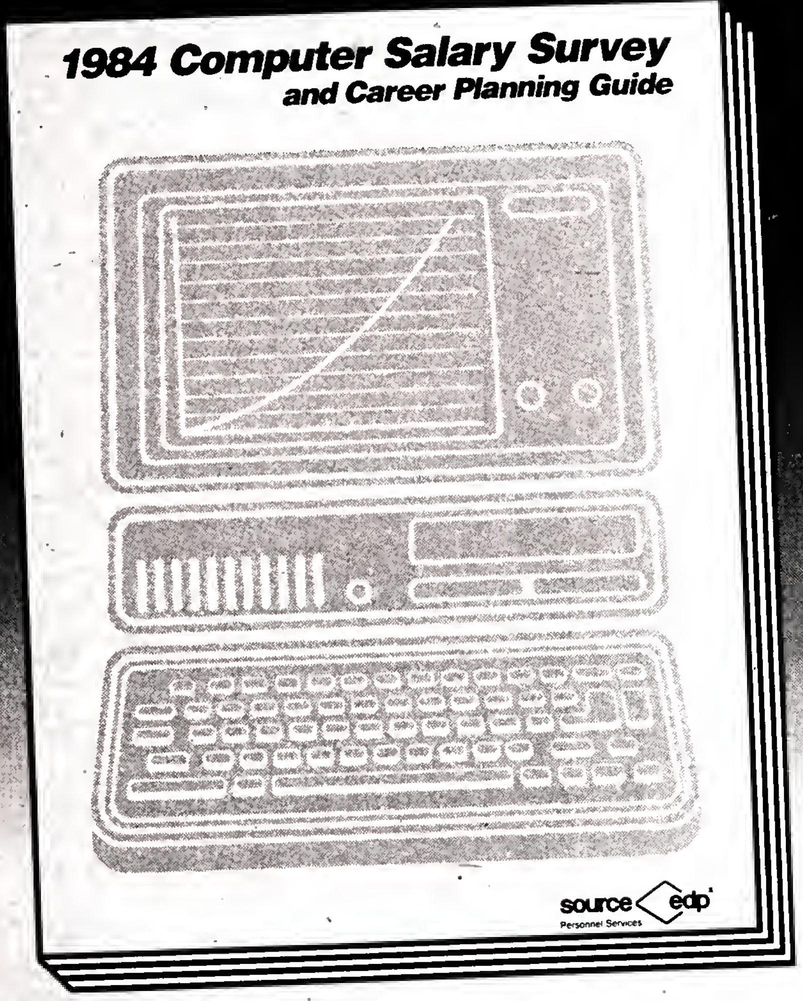

New 1984 Salary Data

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Los Angeles/ South Bay	213/540-7500
Los Angeles/West	213/203-8111
San Diego	619/231-1900
San Fernando Valley	818/781-4800
Colorado	
Denver	303/773-3700
Connecticut	
Danbury	203-797-0590
Hartford	203/522-6590
New Haven	203/787-4595
Stamford	203/967-4888
Stratford	203/375-7240
District of Columbia	
Washington D.C.	202/293-9255
Florida	
Fort Lauderdale	305/491-0145
Jacksonville	904/356-1820
Miami	305/624-3536
Georgia	
Atlanta/Downtown	404/588-9350
Atlanta/North	404/953-0200
Illinois	
Chicago/E. Loop	312/861-0770
Chicago/W. Loop	312/346-1280
Oak Brook	312/986-0422
Rolling Meadows	312/392-0244
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Fort Wayne	219/432-7333
Indianapolis	317/631-2900
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Des Moines	515/243-0191
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Overland Park	913/888-8885
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Greenbelt	301/441-8700
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Grand Rapids	616/459-6539
Lansing	517/484-4561
Southfield	313/352-6520
Troy	313/362-0070
Minnesota	
Minneapolis	
West	612/544-3600
Downtown	612/332-6460
St. Paul	612/227-6100
Missouri	
Kansas City	816/474-3393
St. Louis	314/862-3800
Nebraska	
Omaha	402/346-0709
New Hampshire	
Nashua	603/880-4047
New Jersey	
Cherry Hill	609/482-2600
Edison	201/494-2800
Morristown	201/267-3222
Paramus	201/845-3900
Princeton	609/452-7277
New Mexico	
Albuquerque	505/247-4270
New York	
Albany	518/482-2035
Buffalo	716/835-9630
New York City	
Grand Central	212/557-8611
Penn Station	212/736-7445
Wall Street	212/962-8000
Rochester	716/263-2670
Syosset, L.I.	516/364-0900
Syracuse	315/422-2411
White Plains	914/683-9300
North Carolina	
Charlotte	704/552-6577
Greensboro	919/379-1155
Raleigh	919/847-7605
Winston-Salem	919/724-0630
Ohio	
Akron	216/535-1150
Cincinnati	513/769-5080
Cleveland	216/771-2070
Columbus	614/224-0660
Dayton	513/461-4660
Toledo	419/242-2601
Oklahoma	
Oklahoma City	405/722-7410
Tulsa	918/599-7700
Oregon	
Portland	503/223-6160
Pennsylvania	
King of Prussia	215/265-7250
Philadelphia	215/665-1717
Pittsburgh	412/261-6540
Rhode Island	
Providence	401/751-0065
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Nashville	615/256-0625
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Austin	512/479-0720
Dallas	
Central	214/954-1100
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Fort Worth	817/338-9300
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Downtown	713/751-0100
Galleria/Post Oak	713/439-0550
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Utah	
Salt Lake City	801/966-3900
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McLean	703/790-5610
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Senior Programmer/ Programmer Analyst

Yamaha International Corporation has two openings in our Information Systems Department; a Senior Programmer and a Programmer Analyst. Successful candidates should have 3 to 5 years programming experience within a business environment and experience on a Burroughs large system, CANDE and DMS II.

Duties will include business applications, writing program specifications, coding, testing and debugging programs. Good communication skills, both written and verbal are required.

Please respond with resume, complete with past salary and present requirements to: Patty Glenn

Yamaha
International
Corporation

P.O. Box 6600
Buena Park, CA 90622

Only complete resumes will be considered.

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Network and Communications Manager

The University of Alaska Computer Network

The UACN provides the statewide University of Alaska system of academic and administrative computing and data communications services. The Network and Communications Manager is responsible for evaluating communications service requirements and determining the facilities needed to meet these requirements. Also, this post is responsible for evaluating, coordinating and supervising the operation, maintenance, enhancement, and planning of the communications network and its facilities. The successful applicant must possess knowledge of communications network architecture, engineering, local area networks, and data communications. In addition, skill in the management and development of large data communications networks are required.

The position is based in Fairbanks, Alaska and will report to the Director of Network and Operations. The salary range begins at $42,765 DOE.

Application letters, together with a resume and at least 3 professional references must be postmarked by March 30, 1984 and sent to:

Statewide Office of
Human Resource Development
University of Alaska
303 Tanana Drive
Room 1 Bunnell Building
Fairbanks, Alaska 99701

Your application for employment with the University of Alaska may be subject to public disclosure should you be amoung the finalists for the position.

The University of Alaska is an Equal Employment/Affirmative Action Employer and Educational Institution.

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• Distributed Systems	• Logical Modeling
• Relational - CODASYL	• Logical/Physical Design

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MARKET RESEARCH SPECIALIST

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ITT Telecom
Business & Consumer
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For immediate consideration send resume to:

Edgar F. Kaiser Health Center
Personnel Department Room 110
3600 N. Interstate Avenue
Portland, Oregon 97227

Kaiser Permanente Medical Care Program

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DIRECTOR COMPUTING AND INFORMATION SERVICES

THE UNIVERSITY OF GEORGIA

The University of Georgia invites applications and nominations for Director of the Office of Computing and Information Services. Responsibilities include management of the computing facilities (an IBM 3081D, two IBM 370/158 AP systems, two VAX 780's, a CDC CYBER 825, a CDC CYBER 750, and a CDC CYBER 205), and a staff of 95. Qualified applicants should have at least five years supervisory and managerial experience in a large academic computing facility, a working knowledge of telecommunication networks and distributed data processing, appropriate technical background in computer systems and their uses, excellent oral and written communications skills, and should hold a degree from a recognized institution of higher education. Please submit resume, with references and salary requirements, postmarked by March 1, 1984 to: **Dr. James B. Kenney; Chairman, Screening Committee; Assistant to the President-Administration; The University of Georgia; Old College; Athens, GA 30602.**

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(404) 455-7280

An EOE M/F

Telecommunications Diagnostic Supervisor

The University of Alaska Computer Network

The UACN provides the statewide University of Alaska campuses with academic and administrative computer and data communications services. The Diagnostic Supervisor is responsible for the installation, maintenance, and fault isolation of communications facilities. This position also supervises the telecommunications diagnostic staff and provides technical assistance to network users. The successful applicant must possess knowledge and experience with data communications, communications equipment and terminal interfaces, and network monitoring/testing facilities.

The postion is based in Fairbanks, Alaska and will report to the UACN Network and Communications Manager. The salary range begins at $32,448 per year DOE.

Application letters, together with a resume and at least 3 professional references, must be postmarked by February 29, 1984 and sent to:

Statewide Office of
Human Resource Development
University of Alaska
303 Tanana Drive
Room 1 Bunnell Building
Fairbanks, Alaska 99701

Your application for employment with the Univeristy of Alaska may be subject to public disclosure should you be amoung the finalists for the position.

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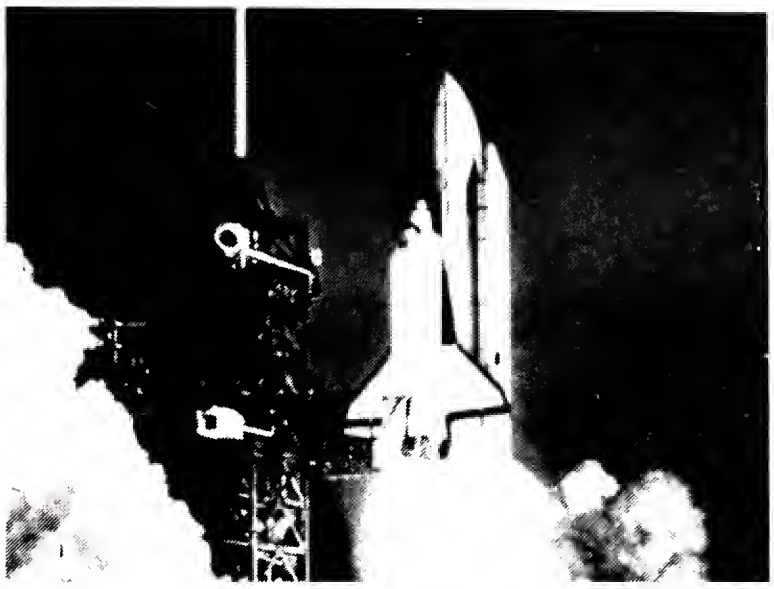

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For Baltimore and Richmond-Attn: Jack McFarland

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Avatar Properties, one of South Florida's largest land developers, located in Coral Gables, has an immediate opening for a self starter with a minimum of 3 years diversified experience using COBOL to develop on line and batch programs. Will be part of project group developing major applications on IBM PC's plus responsibility for maintenance of applications on IBM 4341. Experience with accounting, CICS, ROSCOE, and OS/JCL are desirable. We offer an excellent salary and benefits package. Please send resume to:

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If you have several years of systems programming background in a telecommunications environment, and ideally have a BS in Computer Science or a related discipline, this new position will be highly rewarding.

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Syracuse University's benefits include competitive salaries, advanced degree opportunities, dependent scholarships, and generous vacation and retirement plans. Closing date for applications is February 10, 1984. Send resume to: **CASE Search Committee, Syracuse University, Personnel Department, Skytop Office, Syracuse, New York 13210.**

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Send resume to Laurie Gaffney.

Quanta Corporation
2440 S. Progress Drive
Salt Lake City, UT 84119
Phone (801) 974-0992

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A computer software service company seeks a Senior Member for its Technical Staff. Member will (1) design database system software for microcomputer and time-sharing systems, with emphasis on computer graphics and language interfaces, and (2) integrate microcomputer and main frame software. An applicant must have at least the following minimum qualifications: (a) Basic six-month course in computer programming; (b) Three and one-half (3-½) years experience as a senior member of technical staff or business programmer, including at least two years of experience with graphics and two years experience with a time-sharing system; and (c) Experience in at least one of the following computer languages: Fortran, Pascal or C. The hours of work are 8:00 a.m. to 5:00 p.m., and the salary is $29,700.00. Interested persons should send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference Number 39083. Employer Paid Ad.

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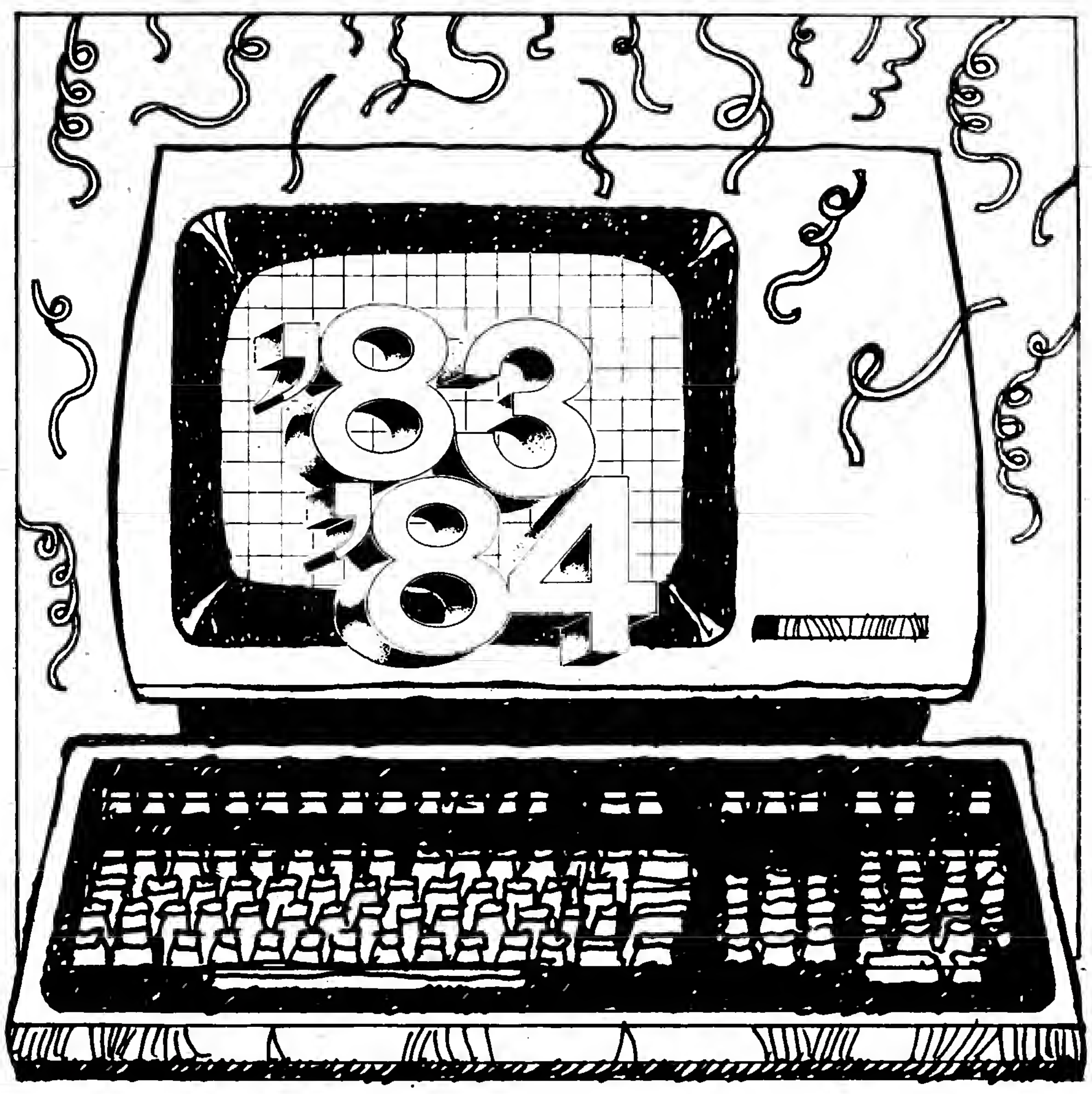

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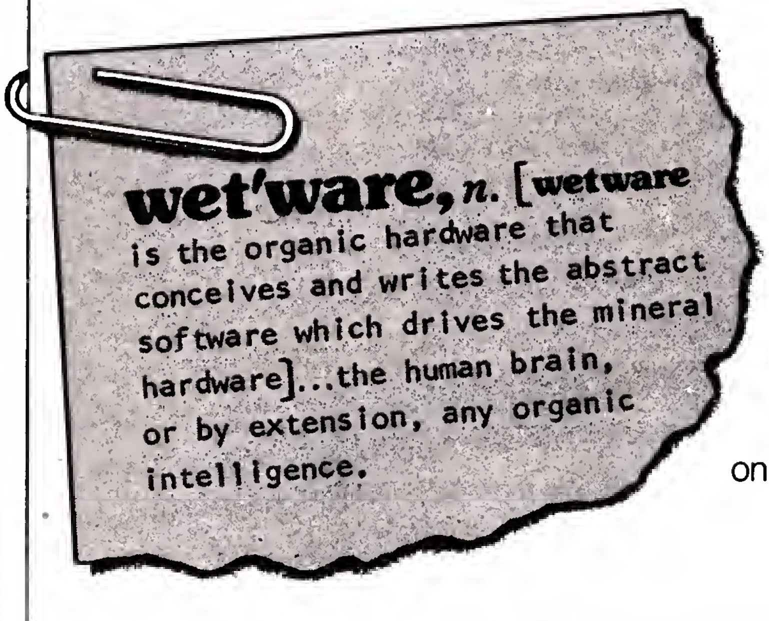

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UNIVERSITY OF IOWA SENIOR SYSTEMS PROGRAMMER

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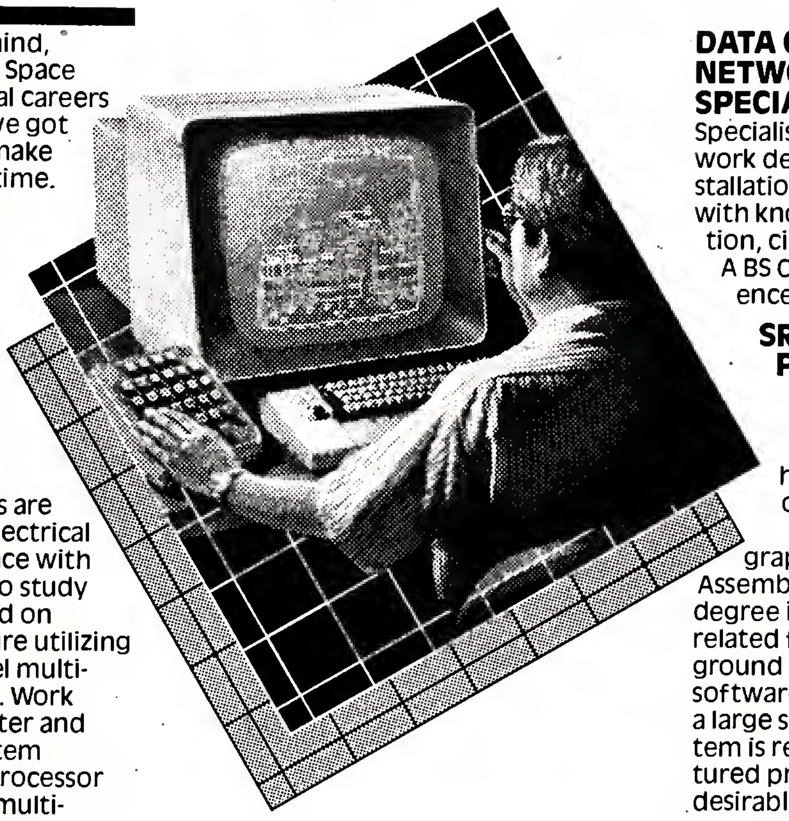

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Dr. Edward C. Mealy
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Department of Mathematics/
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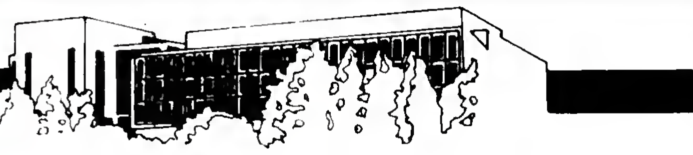

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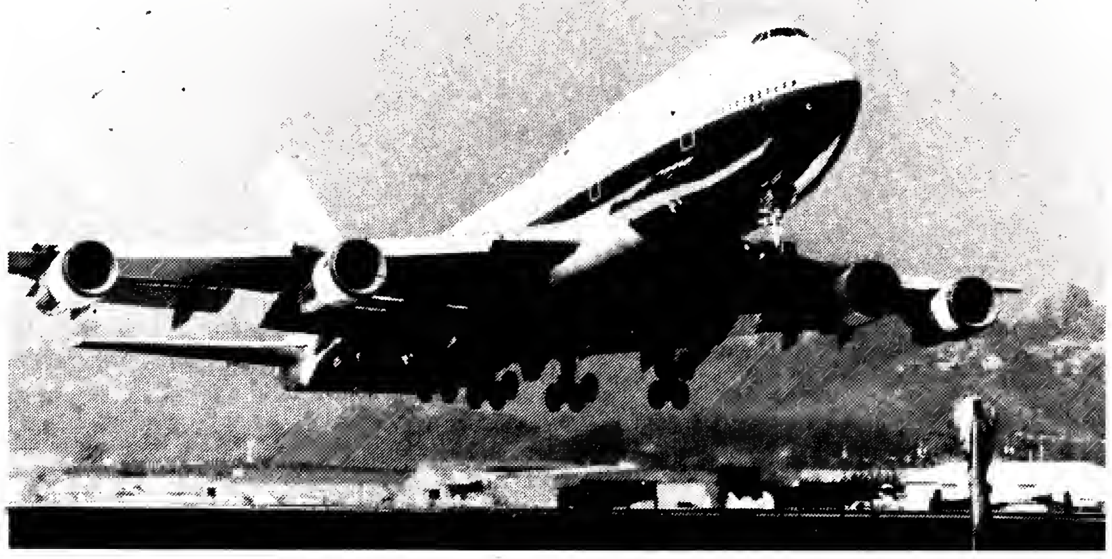

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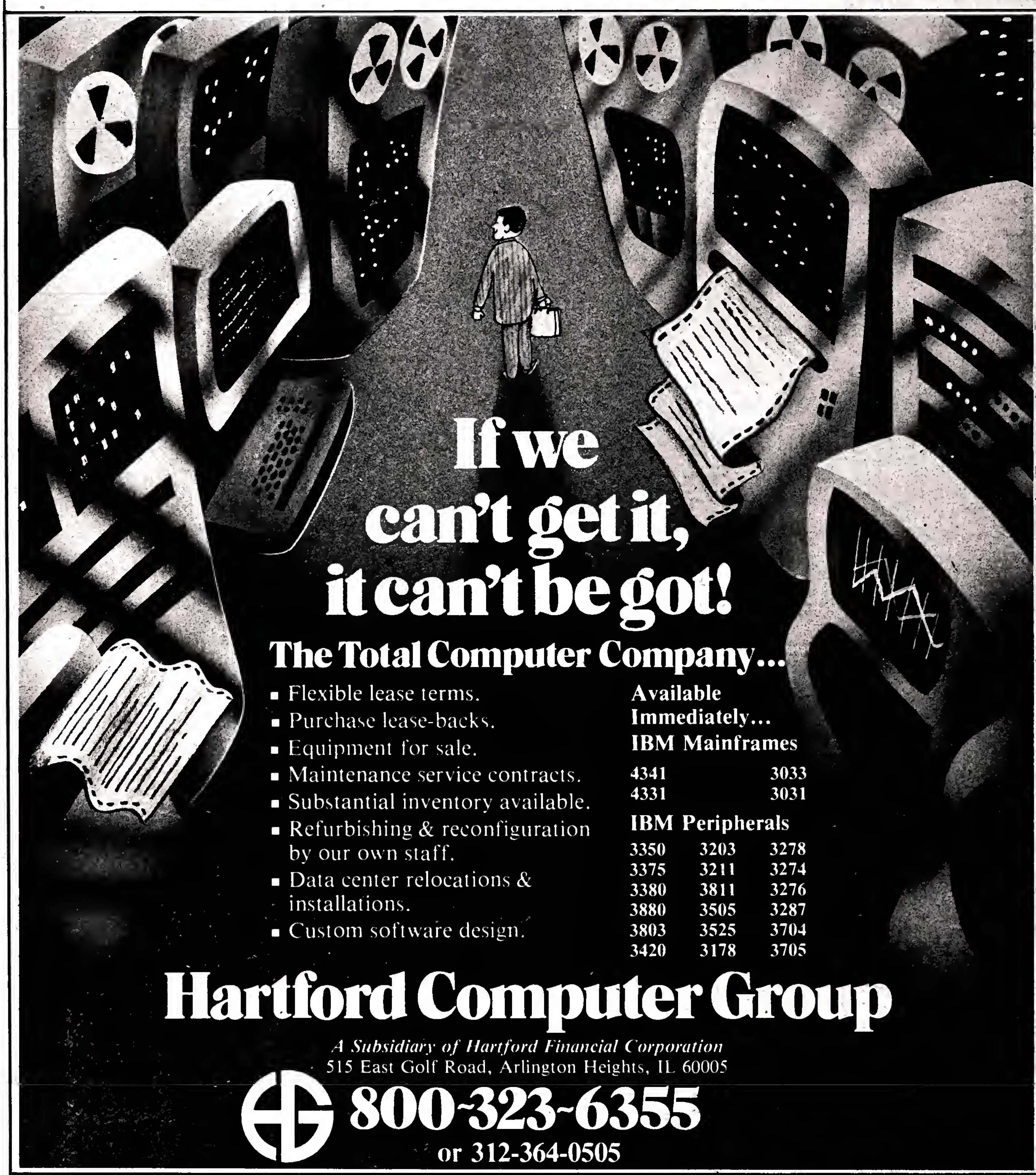

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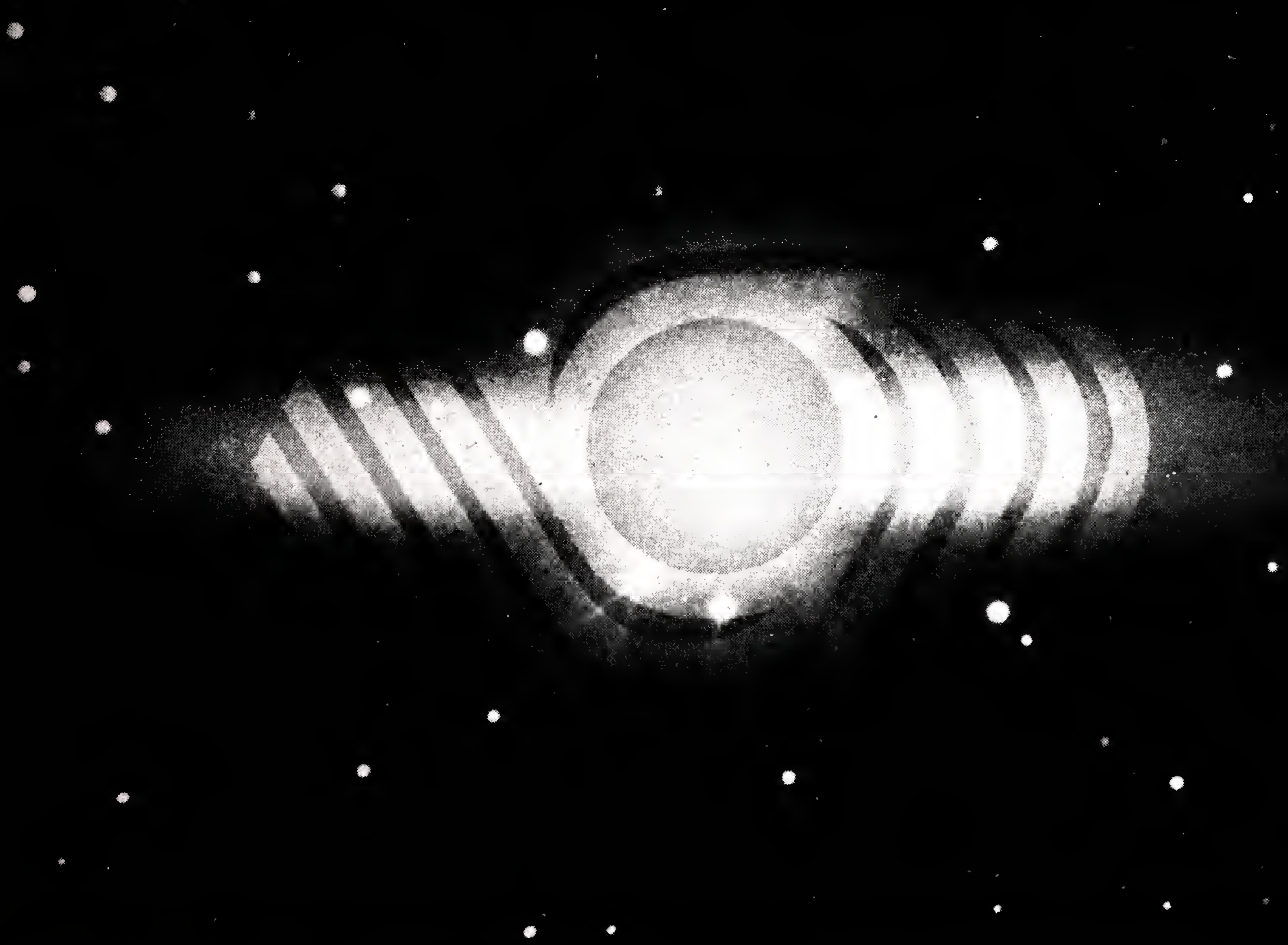

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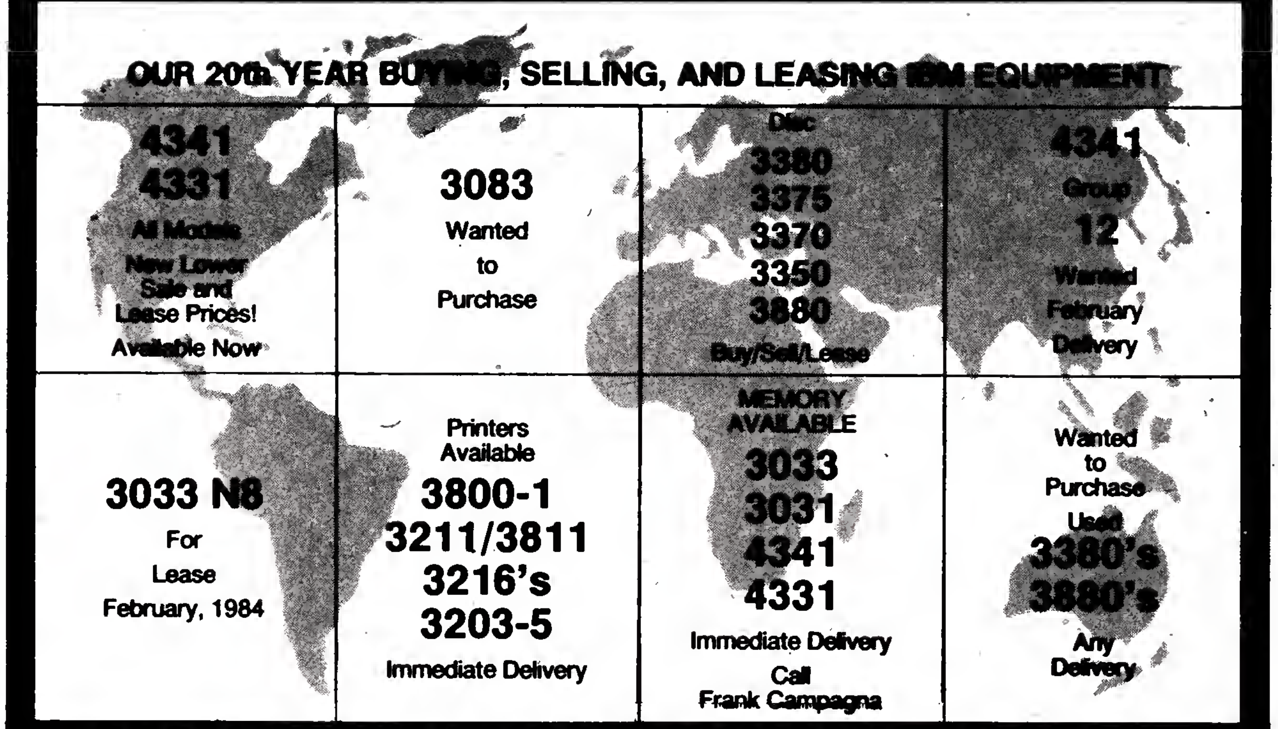

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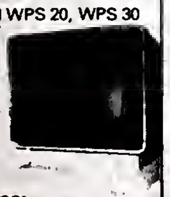

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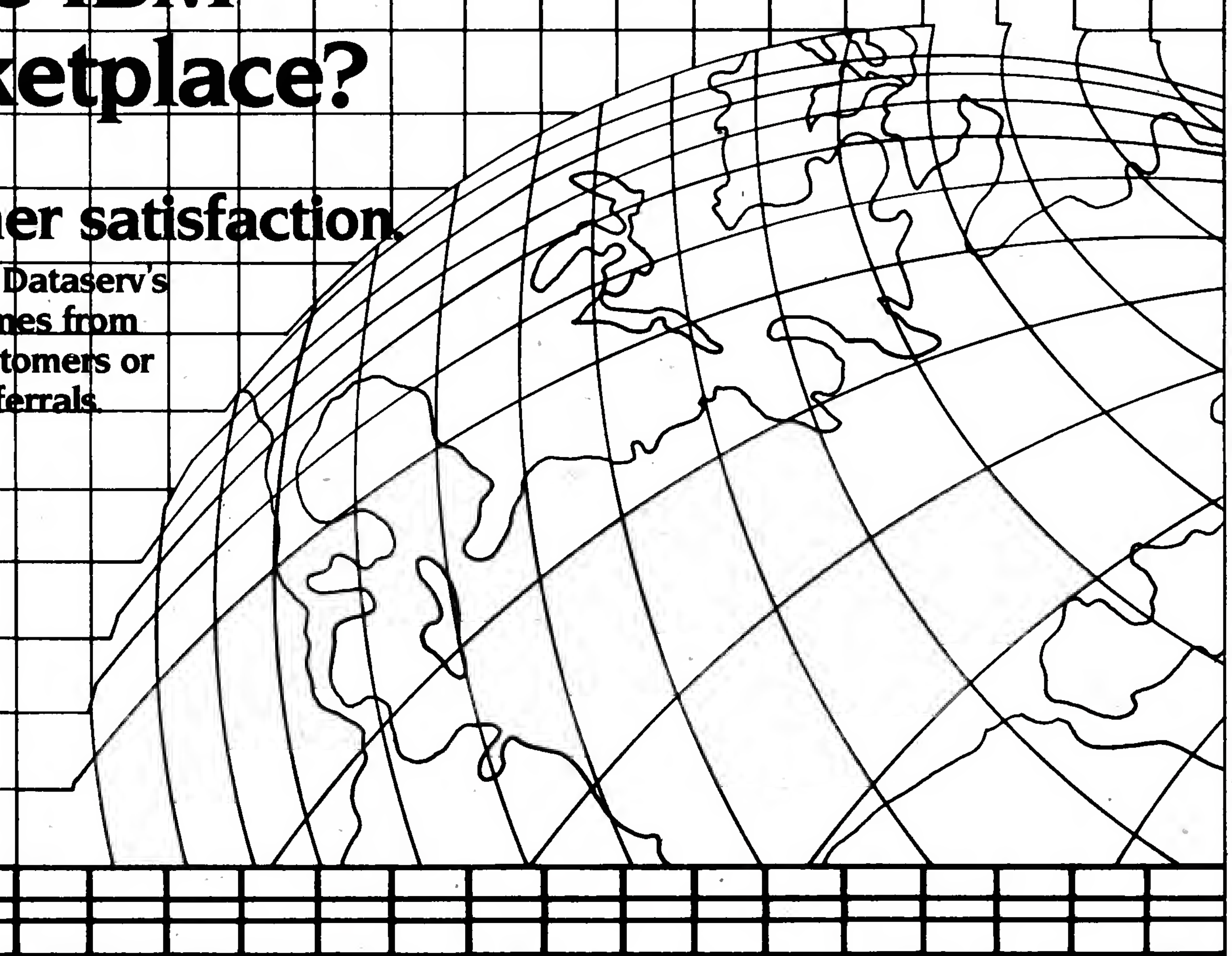

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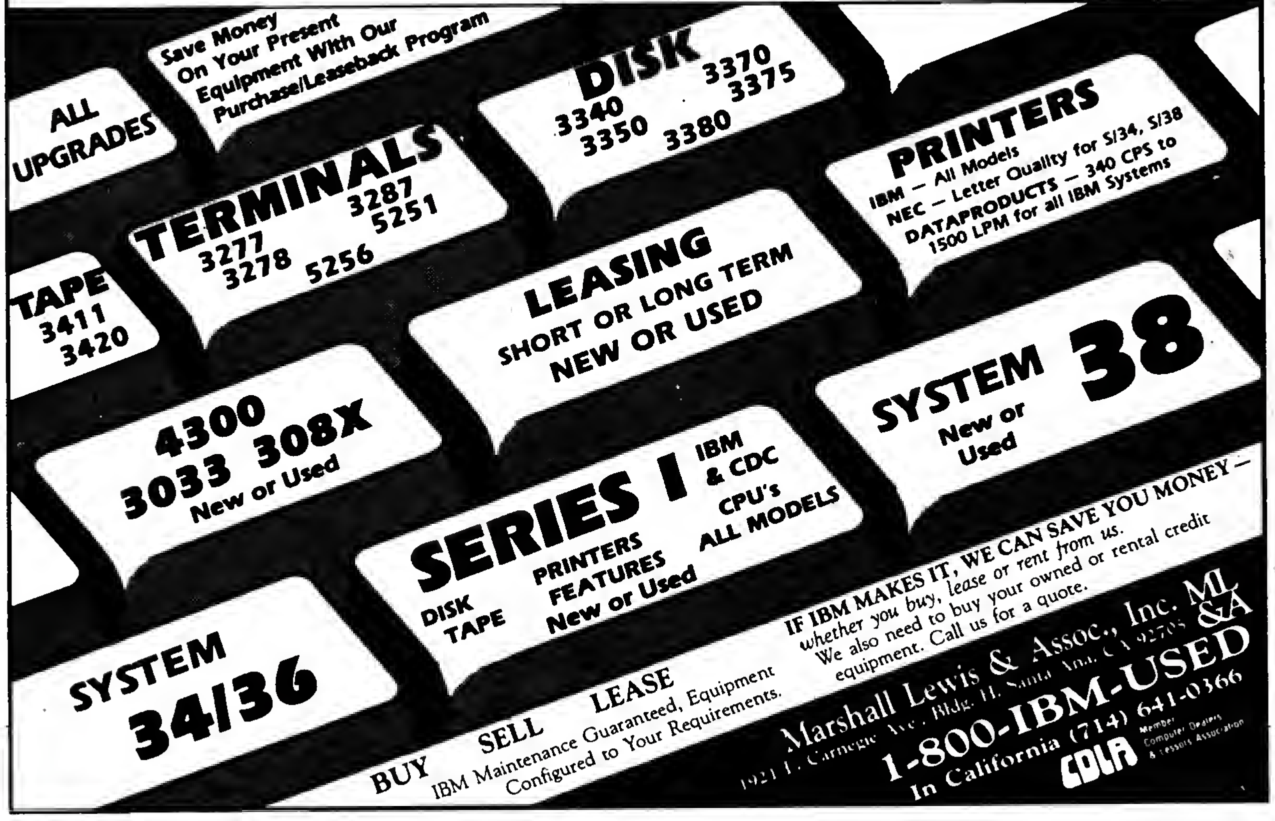

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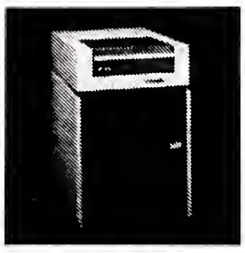

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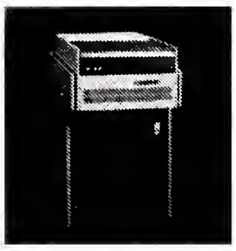

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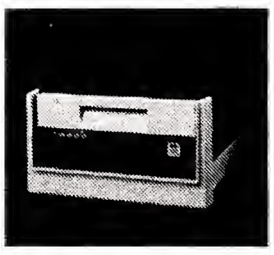

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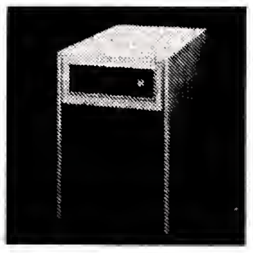

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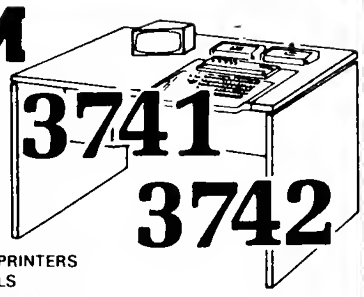

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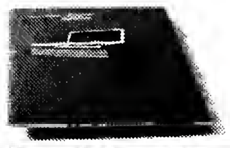

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ADVERTISERS INDEX

ltergo Products	ID/29
American Key Data	76
Apollo Computer	ID/36-ID/37
Appplied Data Communications	27
Artificial Intelligence	58
Auerbach	83
John Beall Company	53
Braegen Corp.	86
Burroughs	ID/8
Cecom, Inc.	54
Cincom	64-65
Communication Sciences	46
Comnet '84	67
Computer Tech Group	16
CPT, Inc.	52
Cullinet	59
CW Mexico	62
CW On Communications	70
CW Supplement	87
CW Sweden	84
Data Base Management	50
Data General	66
Data Processing Design	ID/39
Data Systems for Industry	ID/22
Datapoint	22
Dataproducts	11,13,15,60,71,78
DEC/TPG	48-49
Deltak	ID/40
Desktop Computers	10
Dynacalc	ID/40
Elron Technologies, Inc.	38
Enterprise Technology	58
Exxon Office Systems	63
Fibronics	54
Fusion Products	57
General Electric	ID/18-ID/19
General Research Corp.	28
Goal Systems International	ID/27
Graham Magnetics	85
Group Operations	12
H & W Computer Systems	62
Hogan Systems	32
Holland Systems	76
Honeywell Information Systems	ID/24-ID/25
Hughes Aircraft	ID/2,ID/34
IBM	55
Informatics	47
Inmac	68
Innovation Data Processing	7
Integrated Business Computers	ID/35
Interface Systems	46
ITT Courier	74-75
KMW Systems	51
Knoware	36
LBM Software Corporation	70
Local Data	8,ID/22
Mail Advertising Supply	26
Martin Marietta	25
Memorex	56-57
MicroAge	24
MicroFrame	38
MSA	120
MTI Systems Corp.	11,13,15
Mike Murach & Associates, Inc	9
NCR	ID/9-ID/16
NCR Corporation	19
NCR Product Marketing	ID/38
NEC	72-73
NESTU, Inc.	ID/34
Northeast Expositions	ID/28
Pace Applied Technology	37
PC World Expo	ID/30-ID/31
Phaser	ID/4-ID/5
Phoenix Computer Corp.	ID/3
Prime Computer	68
Rendeck Corporation	38
Renex Corp.	78
RTC Systems, Inc.	23
SAS	20-21
Signal Technology Inc.	10,12
SMC/Intech	ID/6
Softech Microsystems	29
Software A G	39
Sperry Corp.	33
Stone Mountain Computing	6
Syncsort	3
Systemware	42
Tandem Computers	43-45
Texas Instruments	34-35,80-81
Transnet Corp.	78
Triangle	ID/17
Uninet	ID/21
Unipress	78
Universal Data Systems	ID/32
USPS	ID/20
Value Computing	50
Verbatim	ID/26
Visicorp	82
VM Software	5
Wang Laboratories	18
Western Telematics	42
Wilson Business Machines	ID/19
Winterhalter Associates	40-41
Xerox	77

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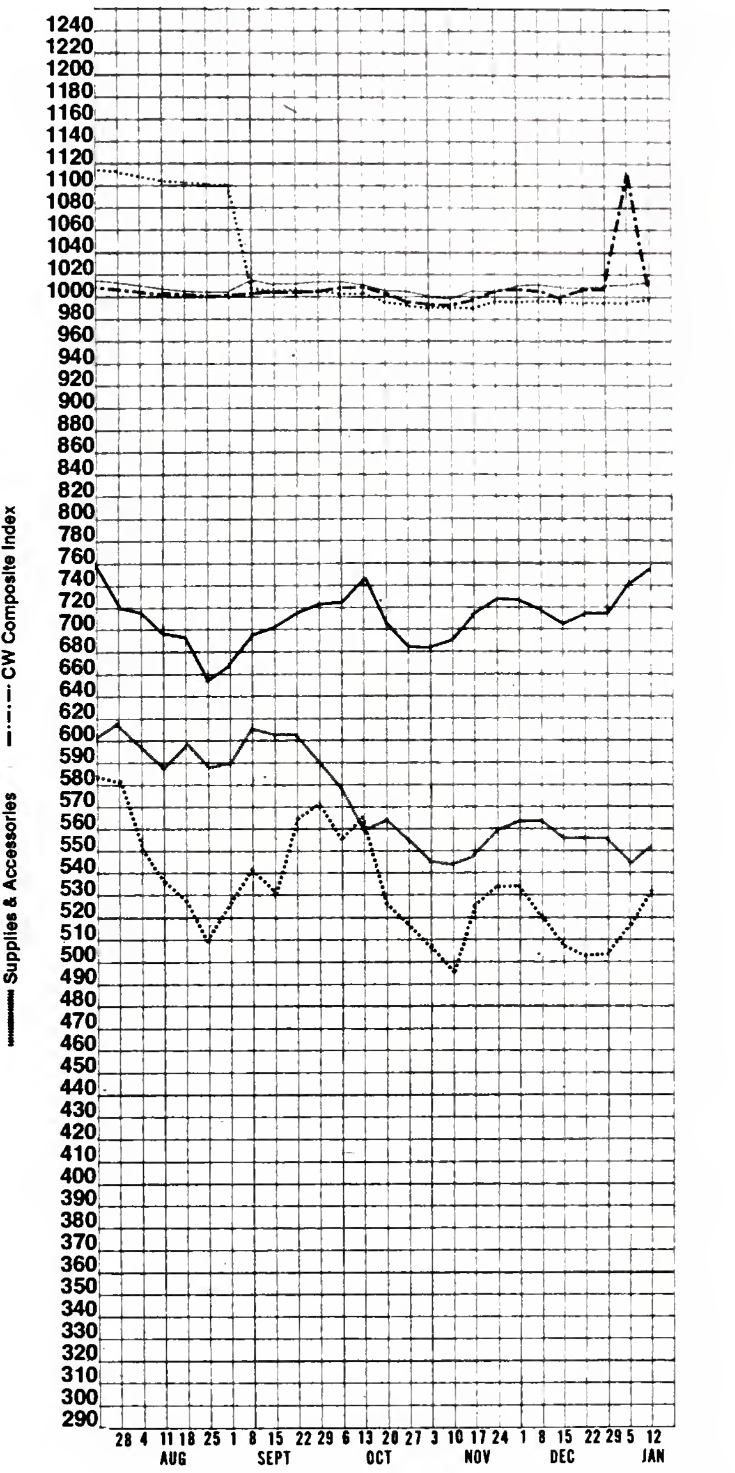

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JANUARY 11, 1984

All statistics compiled, computed and formatted by
TRADE QUOTES, INC
Cambridge, Mass. 02139

EXCH		PRICE 1983-84 RANGE (1)	CLOSE JAN 11 1984	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
O	ALPHA MICROSYSTEMS	11- 24	17 1/2	+1 3/4	+11.1
O	ALTOS COMPUTER SYST	8- 28	11 3/4	+ 1/4	+2.1
A	AMDAHL CORP	9- 30	19 1/8	+ 1/2	+2.6
O	APPLE COMPUTER INC	18- 63	28	+ 1/8	+0.4
N	AT&T	60- 70	65	+ 5/8	+0.9
N	BURROUGHS CORP	28- 58	51 1/2	+1 3/8	+2.7
O	COMPUTER AUTOMATION	8- 17	8 1/2	+ 3/4	+9.6
A	COMPUTER CONSOLES	8- 28	15 1/4	- 3/4	-3.7
N	CONTROL DATA CORP	21- 62	46 1/2	+ 1/2	+1.0
O	CONVERGENT TECHNOL	18- 41	26 3/4	+1 1/8	+4.3
N	CRAY RESEARCH INC	20- 58	57 3/8	+1 1/4	+2.2
N	DATA GENERAL CORP	10- 43	42 1/2	+3 1/8	+7.9
N	DATAPOINT CORP	11- 36	28 5/8	- 1/4	-0.8
N	DIGITAL EQUIPMENT	62-132	74 1/4	+ 3/4	+1.0
A	EECO INC	6- 16	13 3/4	- 1/8	-0.9
N	ELECTRONIC ASSOC.	5- 15	7 7/8	+ 1/4	+3.2
N	FLOATING POINT SYST	16- 44	35 5/8	- 3/4	-2.0
N	FOXBORO	22- 47	38 7/8	+3 1/8	+8.7
O	GENERAL AUTOMATION	3- 16	13 1/4	+2 1/8	+19.1
N	GOULD INC	26- 44	33 7/8	+1 5/8	+5.0
N	HARRIS CORP	20- 51	39 1/2	-1 1/8	-2.7
N	HEWLETT-PACKARD CO	22- 48	41 5/8	-1 7/8	-4.3
N	HONEYWELL INC	60-138	132	- 1/2	-0.3
N	IBM	57-134	122 1/4	-1 5/8	-1.3
O	IPL SYSTEMS INC	5- 14	6 1/4	+ 1/4	+4.1
N	M/A-COM INC	19- 35	21	+1 1/8	+5.6
O	MAGNUSON COMP SYSTS	1- 5	3/8	0	0.0
N	MANAGEMENT ASSIST	7- 19	18 3/4	+1	+5.6
N	MATSUSHITA ELEC(ADR)	47- 86	81 7/8	-4 3/8	-5.0
N	MODULAR COMPUTER SYS	6- 16	8 1/2	+ 3/8	+4.6
N	MOHAWK DATA SCI	10- 19	15 7/8	+ 5/8	+4.0
N	MOTOROLA INC	82-148	135 3/8	- 1/4	-0.1
N	NAT'L SEMICONDUCTOR	15- 80	18 1/4	+2	+12.3
N	NCR	39-136	125 1/8	+1 3/8	+1.0
N	PERKIN-ELMER	17- 37	28 3/4	- 1/8	-0.4
N	PRIME COMPUTER INC	11- 30	18 7/8	+1	+5.5
N	SPERRY CORP	21- 45	48 7/8	+1 1/4	+2.8
O	TANDEM COMPUTERS INC	14- 40	38 1/2	+2 7/8	+7.8
N	TANDY CORP	34- 65	36 3/4	-3 1/2	-8.6
O	TELEVIDEO SYSTEMS	14- 41	15 3/4	- 1/8	-0.7
O	TELXON CORP	9- 16	10 3/8	- 3/8	-3.4
N	TEXAS INSTRUMENTS	71-176	138	-2 3/4	-1.9
A	ULTIMATE CORP	8- 24	18 7/8	+ 3/8	+2.0
O	VECTOR GRAPHICS INC	2- 14	2	+ 1/8	+6.6
A	WANG LABS "B"	13- 42	36	- 1/4	-0.6
A	WANG LABS "C"	11- 42	36 1/8	- 1/2	-1.3
N	XEROX CORP	35- 52	50 1/8	- 1/2	-0.9
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	11- 35	34 1/4	+ 1/2	+1.4
N	COMDISCO INC	7- 42	20 3/4	+ 5/8	+3.1
O	CONTINENTAL INFO SYS	3- 18	9	+ 1/2	+5.8
N	DPF INC	5- 15	13 7/8	+ 1/8	+0.9
N	U.S. LEASING	18- 47	36 3/8	+1 3/8	+3.9
	COMPONENTS				
N	ADVANCED MICRO DEV	13- 37	35 5/8	+ 1/2	+1.4
O	ADV'D SEMICONDUCTOR	12- 38	37 3/4	+1 1/4	+3.4
N	ANALOG DEVICES INC	18- 42	38 3/4	+ 1/4	+0.6
O	ANALOGIC CORP	20- 27	25	+ 3/4	+3.0
N	APPLIED MAGNETICS CP	19- 37	28 3/8	+1 7/8	+7.0
N	TERADYNE	14- 39	38 5/8	+1 5/8	+4.3
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 8	4	+ 3/4	+23.0
O	ADVANCED SYSTEMS INC	6- 22	21	+ 1/4	+1.2
O	AGS COMPUTERS INC	7- 32	28 3/4	- 1/4	-0.8
O	AMERICAN SOFTWARE	17- 31	19	0	0.0
N	ANACOMP INC	5- 23	5 1/8	-1 5/8	-24.0
O	ANALYSTS INTL CORP	5- 20	13 1/2	+1 3/4	+14.8
A	APPLIED DATA RES.	8- 37	29 3/8	+ 3/4	+2.6
O	ASK COMPUTER SYSTEMS	6- 21	19	+1 1/2	+8.5
B	ASTRADYNE COMP IND	1- 7	3	+ 5/8	+26.3
N	AUTOMATIC DATA PROC	21- 44	36 1/2	+1 1/2	+4.2
O	CGA COMPUTER ASSOC	5- 17	12 3/4	+ 1/8	+0.9
O	COMPUTER ASSOC INT'L	6- 35	27 3/4	+ 3/4	+2.7
O	COMPUTER HORIZONS	8- 20	15	+1 1/4	+9.0
O	COMPUTER NETWORK	4- 10	7 3/8	+ 3/4	+11.3
N	COMPUTER SCIENCES	11- 23	20 1/2	+ 5/8	+3.1
O	COMPUTER TASK GROUP	8- 22	15	0	0.0
O	COMPUTER USAGE	2- 22	13 3/4	+ 1/2	+3.7
O	COMPUTONE SYSTEMS	5- 38	8 1/4	0	0.0
O	COMSERV CORP	5- 20	6 1/2	+ 5/8	+10.6
O	COMSHARE	7- 14	12 1/2	-1 1/8	-8.2
N	CULLINET SOFTWARE	12- 50	40 7/8	- 1/8	-0.3
O	CYCARE SYSTEMS INC	9- 27	19	- 1/4	-1.2
N	ELECTRONIC DATA SYST	10- 42	34 1/2	+1 1/4	+3.7
O	HOGAN SYSTEM INC	19- 53	21 5/8	- 5/8	-2.8
N	GENERAL ELECTRIC CO	45- 59	57 7/8	- 1/8	-0.2
N	GTE CORP	39- 48	43 1/4	+ 1/4	+0.5
N	INFORMATICS INC	10- 34	21 1/4	+1 1/2	+7.5
O	INFOTRON SYSTEMS COR	25- 43	38	+1 1/4	+3.4
O	KEANE ASSOCIATES	4- 15	8 1/4	+ 1/2	+6.4
A	LOGICON	8- 31	29 3/8	- 1/2	-1.6
O	MCI COMMUNICATIONS	13- 34	15 1/8	- 1/4	-1.6
O	MNGT SCI AMER INC	8- 33	23	-4 3/4	-17.1
O	MATHEMATICAL APP GRP	10- 22	11 1/2	+1	+9.5
O	MICOM SYSTEMS INC	25- 50	46 3/4	+4	+9.3
O	MONCHIK-WEBER CP	8- 22	9	+1	+12.5
O	NATIONAL DATA CORP	5- 26	18 3/4	- 5/8	-3.2
O	ON-LINE SOFTWARE INT	17- 27	17	- 1/2	-2.8
O	PANSOPHIC SYSTEMS	8- 30	19 7/8	- 7/8	-4.2
N	PLANNING RESEARCH	6- 21	17 1/8	+ 1/4	+1.4
O	POLICY MGMT SYSTS CP	15- 35	29 1/4	- 3/8	-1.2
O	PROGRAMMING & SYS	1- 8	5 1/8	- 1/8	-2.3
O	REYNOLDS & REYNOLD	17- 53	40 1/4	+2 1/2	+6.6
O	SEI CORP	11- 34	26 1/2	+ 3/8	+1.4
O	SHARED MEDICAL SYST	13- 43	33 1/2	- 1/8	-0.3
O	SCIENTIFIC COMPUTERS	6- 14	11 1/4	+ 1/4	+2.2
O	SOFTWARE AG	5- 17	13 1/2	+1 3/4	+14.8
N	TYMSHARE INC	12- 30	21 7/8	+ 7/8	+4.1
A	URS CORP	5- 18	14 5/8	+ 7/8	+6.3
N	WYLY CORP	7- 17	10 3/4	+ 1/8	+1.1
	PERIPHERALS & SUBSYSTEMS				
P	AM INTERNATIONAL	2- 7	4 1/2	+	+1.3
A	ANDERSON JACOBSON	9- 26	11 1/2	+ 1/2	+4.5
O	AUTO-TROL TECHNOLOGY	8- 29	25 1/8	+2 1/4	+9.8
O	BANCTEC INC	7- 33	15 3/4	+ 3/4	+5.0
A	BEEHIVE INT'L	4- 15	8 3/4	+1	+12.9
N	BOLT,BERANEK & NEW	5- 30	25	+ 7/8	+3.6
O	CAMBEX CORP	1- 4	1 3/8	0	0.0
N	CENTRONICS DATA COMP	6- 28	13 3/4	- 7/8	-5.9
A	CETEC CORP	4- 12	11	+ 3/8	+3.5
O	COGNITRONICS	2- 20	11 7/8	+1	+9.1
O	COMPUTER DEVICES INC	1- 21	1	+ 3/8	+60.0
O	COMPUTER TRANSCEIVER	4- 12	4 7/8	+1 1/8	+30.0
N	COMPUTERVISION CORP	19- 53	43 3/4	+2 1/8	+5.1
N	CONRAC CORP	16- 38	17 5/8	+1 3/8	+8.4
A	DATAPRODUCTS CORP	16- 41	30 1/4	0	0.0
A	DATARAM CORP	5- 12	10 1/2	+ 3/4	+7.6
O	DATA SWITCH CORP	13- 41	31	+2	+6.8
O	DATUM INC	2- 17	8 3/8	0	0.0
O	DECISION DATA COMPUT	3- 16	12 1/2	+1	+8.6
O	DOCUTEL-OLIVETTI	11- 39	14 3/8	+ 7/8	+6.4
N	ELECTRONIC M & M	5- 11	8	- 1/4	-3.0
O	ENDATA, INC	11- 16	11	0	0.0
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O	INFORMATION SCIENCE	12- 17	13 1/2	- 1/2	-3.5
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A	LUNDY ELECTRONICS	7- 19	11 7/8	+ 1/8	+1.0
O	MEGADATA CORP	9- 15	12 1/4	+ 1/4	+2.0
A	MSI DATA CORP	16- 37	21	+ 3/4	+3.7
N	NASHUA CORP	9- 29	24	- 3/8	-1.5
O	NETWORK SYSTEMS CORP	8- 34	23 7/8	+2 1/4	+10.4
N	NO AMERICAN PHILIPS	47- 79	79	+1 1/2	+1.9
N	NORTHERN TELECOM LTD	22- 49	39 1/8	- 7/8	-2.1
O	OMEX	3- 6	2 1/4	0	0.0
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N	RAYTHEON CO	42- 58	46 7/8	+2 7/8	+6.5
N	RECOGNITION EQUIP	4- 17	13 3/8	+ 1/2	+3.8
N	ROLM CORP	40- 80	45	-5 1/8	-10.2
N	SANDERS ASSOCIATES	47-120	49	- 1/8	-0.2
O	SCAN DATA	1- 3	5/8	- 1/8	-16.6
O	SCAN-TRON CORP	12- 19	18 1/4	+ 1/4	+1.3
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N	TEKTRONIX INC	[illegible]- 87	74	-2 1/4	-2.9
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N	AMERICAN BUS PRODS	7- 23	21 1/8	+ 1/8	+0.5
N	BARRY WRIGHT	13- 33	32 1/2	+1 1/2	+4.8
A	DUPLEX PRODUCTS INC	12- 27	26 3/4	0	0.0
N	ENNIS BUS. FORMS	6- 28	23 7/8	+1 5/8	+7.3
N	3M COMPANY	49- 90	82 3/4	-1 3/8	-1.6
N	MOORE CORP LTD	26- 51	42 1/2	+ 3/4	+1.7
O	STANDARD REGISTER	11- 34	32 1/4	+1	+3.1
N	WALLACE BUS FORMS	11- 33	28 1/8	-1 3/8	-4.6

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

15 pointed questions to ask MSA or any software supplier

These questions will help you when you sit down with individual software companies.

They're tough questions. Relevant ones. And any supplier who is worth his salt should be able to answer them without backpedaling.

Ask MSA

We'll answer all these questions to your satisfaction—plus any others you may have.

In fact, we're probably the best equipped to answer them. Because MSA is *the* software company. We offer the most complete line of totally integrated systems in the software industry, including financial, human resource and manufacturing.

So you avoid the headache of trying to tie together individual systems. (And the even bigger headache of adding to them.)

With MSA's integrated systems, there's no unnecessary duplication of data or effort. Reporting is faster. All your company's information is more timely and accurate—and in the right form.

Our technical edge comes from experience

Staying ahead is easier for a company that's steeped in software technology. MSA has spent years developing, refining, testing and enhancing our systems.

This year alone, we'll invest $25 million to make sure all our systems are technologically razor sharp. That gives us a decided advantage over flash-in-the-pan technology that may not have the bug-free logic of a more experienced system.

It also gives you a decided advantage over "custom" systems you have to update yourself.

MSA relieves you of that time-consuming burden. We update and enhance your software for a full year. Then we continue this service for a surprisingly low annual fee.

Maintenance includes keeping your system up-to-date technologically. Enhancing it with new features that make it work even harder for you.

And making sure it reflects changes in accounting procedures and government regulations, including 401(k), TEFRA, and FAS52. (That eliminates a lot of tedious work you normally have to do.)

Save this box. It can help you make an intelligent software decision.

1. Can you offer us a complete range of software systems designed to work together?

Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?

Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?

Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online so all of our information is current?

How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?

Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?

What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?

Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?

What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?

How many of these were installed in the past six months? How many of your earlier customers are still using —and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?

Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?

Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?

Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?

How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?

What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes will your system be flexible enough to change with it?

Or will we have to pay a lot to revamp it? Or even regenerate it?

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35,000 days of training

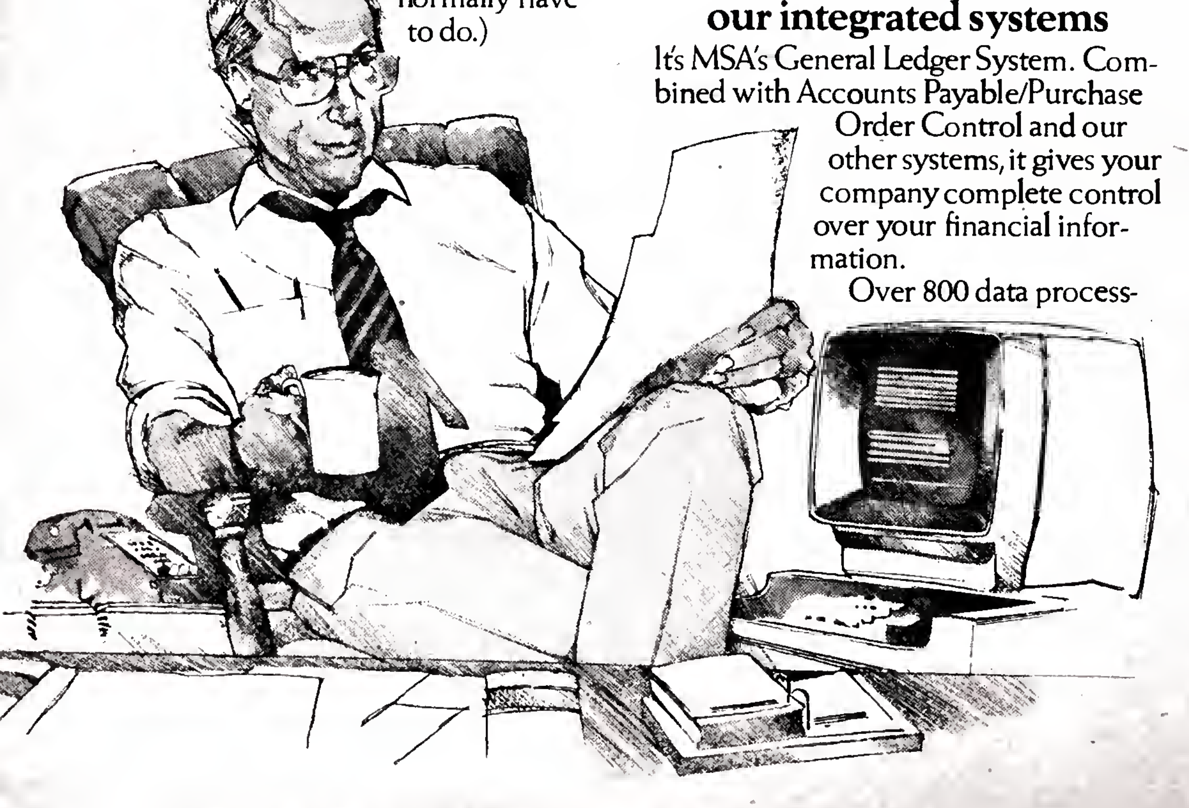
At MSA, we make sure your people have a firm grasp of our systems. Last year alone, we conducted more than 35,000 student days of customer training for over 1,800 companies. At education centers all over the world, as well as at our headquarters.

From training sessions to cassettes to complete, easy-to-understand documentation, MSA provides the most extensive Customer Education Programs in the industry.

And MSA systems are just as friendly as our people. Our online HELP feature actually guides users through our systems, and EASY-SCREEN™ lets them design their own screens without creating data processing nightmares.

If there's ever a question or problem with our systems, MSA customers are always close to service.

Our Account Managers are knowledgeable, responsive, and backed by a complete team of industry specialists.



The heart of our integrated systems

It's MSA's General Ledger System. Combined with Accounts Payable/Purchase Order Control and our other systems, it gives your company complete control over your financial information.

Over 800 data processing specialists, accountants, and financial experts work together to make MSA's financial systems the most advanced and most highly integrated in the industry.

MSA has the answers

Whatever your size—whatever your business—MSA has a total software solution.

We'll provide the highest quality integrated online software.

We'll tie your business and manufacturing software systems together, using our exclusive Extended Closed Loop™ manufacturing system.

We'll provide business software for your microcomputers, through our Peachtree Software Company.

We'll even link your microcomputers to your company's mainframe—with MSA's Executive Peachpak™ application software. A revolutionary concept that lets executives get the mainframe information they need through their personal computers.

MSA ready-to-install application software

1. General Ledger
2. Accounts Payable/Purchase Order Control
3. Budgetary Control/Encumbrance
4. Fixed Assets Accounting
5. Capital Expenditure Tracking
6. Forecasting & Modeling
7. Accounts Receivable
8. Order Processing
9. Foreign Exchange
10. Inventory & Purchasing
11. Payroll
12. Personnel Management & Reporting
13. Manufacturing Control System (MRP II)
14. Executive Peachpak™ II
15. Peachtree Software™ business systems for microcomputers
16. Peachtree Software™ office productivity systems for microcomputers

EASY-SCREEN, Executive Peachpak II, Peachtree Software, and Extended Closed Loop are trademarks of Management Science America, Inc.

Talk to us

If we've whetted your appetite with our 15 questions, clip the coupon below.

We'll send you a concise booklet that will help you even more in your deliberations. We'd also like to send you more information on how MSA can help you plan for software. And on individual systems.

Just fill in the information below, or contact Robert Carpenter at (404) 239-2000.

Management Science America, Inc.
3445 Peachtree Road, N.E.
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☐ Please send me a free detailed brochure.
☐ Please send more information on the following systems. (Write numbers from product list)

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Mainframe Computer Type/Model__________

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